MILWAUKEE COUNTY AUTOMATED MAPPING AND LAND INFORMATION SYSTEM

Sixty-sixth Steering Committee Meeting

AGENDA

DATE: Tuesday, February 7th

TIME: 9:00 a.m.

PLACE: Milwaukee County City Campus
2711 W. Wells Street
Room 349
Milwaukee, Wisconsin

I. Roll Call

II. Special Order of Business

Election of 2006 MCAMLIS Steering Committee Officers.

III. Meeting Minutes

Consideration of the minutes of the 65th Steering Committee meeting held November 1, 2005.

IV. Reports

A. Report by MCAMLIS project staff on the status of street address and cadastral map maintenance.

B. Report by MCAMLIS project staff on the status of the Cadastral Database Migration project.

C. Report by SEWRPC staff on the status of MCAMLIS Topographic Mapping project.

D. Report by SEWRPC staff on the status of SEWRPC Regional Water Study.

E. Report by SEWRPC staff on the status of MCAMLIS Flood Land Mapping project.

F. Report by WE Energies staff on the status of the Digger's Hotline prototype study.

G. Report by SEWRPC staff on 2004 County Surveyor's activities.

H. Report by Milwaukee County DAS staff on MCAMLIS Budget (copy to be distributed at meeting).

V. Old Business

A. Discussion of the procedure to be followed for distribution of the 2005 digital orthophotography acquired through the Topographic Mapping Project.

B. Consideration of a proposal by City of Milwaukee for map maintenance services of MCAMLIS cadastral data holdings residing within the city limits.

C. Consideration of possible MCAMLIS funding for purchase of county-wide license of Pictometry's oblique aerial photography.

VI. New Business

VII. Correspondence

VIII. Date, time, and place of next meeting

IX. Adjournment

City of Franklin
Engineering Department
9229 West Loomis Road, Franklin, Wisconsin 53132-9728 (414) 425-7510 Fax: (414) 425-3106

November 28, 2005

Mr. Kurt W. Bauer, Chairman
Milwaukee County Automatic
Mapping and Land Information System (MCAMLIS)
% Southeastern Wisconsin Regional Planning Commission
P.O. Box 1607
Waukesha, WI 53187-1670

Dear Mr. Bauer:

Pursuant to your direction of the November 1, 2005 MCAMLIS meeting relative to the formation of a nominating committee to report on a list of candidates for 2006, please be advised that Messrs. High and Place and I have unanimously agreed to place in nomination the following:

Dr. Kurt Bauer as chairman
and
Mr. Donald Nehmer as vice-chairman

I have contacted both candidates and they have agreed to serve for the 2006 term.

It is understood, by past practices, that Milwaukee County Department of Public Works will continue as secretary.

If you have any questions, please advise.

Yours very truly,

John M. Bennett, P.E.
City Engineer

JMB/db

C: John Place (WE Energies)
Greg High (Milw. County DPW)
Donald Nehmer (MMSD)
Kevin White (Milw. County DPW)

JB/SEWRPC Bauer as Chairman (MCAMLIS)

MILWAUKEE COUNTY AUTOMATED MAPPING
AND LAND INFORMATION SYSTEM

Sixty-fifth Steering Committee Meeting
Tuesday, November 1st - 9:00 a.m.
Milwaukee County City Campus, Room 349

MINUTES

This meeting was recorded on tape. Committee files contain copies of communication,reports and resolutions, which may be reviewed upon request to the MCAMLIS Project Manager.

65th Meeting Tape No. 1(65-1A): Side A: 01-End of Tape
65th Meeting Tape No. 1(65-1B): Side B: 01-End of Tape
65th Meeting Tape No. 2(65-2A): Side A: 01-End of Tape
65th Meeting Tape No. 2(65-2B): Side B: 01-447

PRESENT: Chairman Bauer, Mr. La Fave, Mr. High, Ms. Van Dunk (Milwaukee County), Mr. Anderson (SBC), Mr. Bennett (ICC), Ms. Olson (City of Milwaukee), Mr. Nehmer (MMSD), Mr. Place (We Energies)
ABSENT: Mr. Coe (WE Energies)

SCHEDULED ITEMS:

Meeting Minutes

Consideration of the minutes of the 64th Steering Committee meeting held May 18, 2005. (65-1A-013)

ACTION: Motion by Mr. Nehmer to approve the minutes as submitted. Motion was seconded by Mr. High. Vote 8-1
AYES: La Fave, High, Van Dunk, Anderson, Bennett, Olson, Nehmer, Place
NOES: Bauer

NOTE: Chairman Bauer requested that the minutes reflect that he did not approve of the summary format of the meeting minutes. He stated that it was his belief that a summary minute format was inadequate for an inter-governmental meeting.

Reports

A. Report by MCAMLIS project staff on the status of street address and cadastral map maintenance. (65-1A-046)

ACTION: Consensus of the Committee to place the report on file.

B. Report by MCAMLIS project staff on the status of the Cadastral Database Migration project. (65-1A-070)

ACTION: Consensus of the Committee to place the report on file.

C. Report by SEWRPC staff on the status of MCAMLIS Topographic Mapping project. (65-1A-102)

ACTION: Consensus of the Committee to place the report on file.

D. Report by SEWRPC staff on the status of SEWRPC Regional Water Study. (65-1A-127)

ACTION: Consensus of the Committee to place the report on file.

E. Report by SEWRPC staff on the status of MCAMLIS Flood Land Mapping project. (65-1A-139)

ACTION: Have MCAMLIS Project staff request a report from SEWRPC staff on the proposed completion dates for Phases I & II.

ADDITIONAL ACTION: Consensus of the Committee to place the report on file.

F. Report by WE Energies staff on the status of the Digger's Hotline prototype study (copy to be distributed at meeting). (65-1A-195)

ACTION: Consensus of the Committee to place the report on file with the expectation that a draft report will be presented at the next MCAMLIS Steering Committee meeting.

G. Report by Milwaukee County DAS staff on MCAMLIS Budget (copy to be distributed at meeting). (65-1A-380)

ACTION: Consensus of the Committee to place the report on file.

NOTE: Chairman Bauer asked that the minutes reflect that he complemented Ms. Van Dunk for the completeness of her report.

Old Business

Consideration of a improvement plan by Milwaukee County Register of Deeds to utilize $1 recording fees. (65-1A-586)

ACTION: Motion by Mr. La Fave to approve an increase of $200,000 to a previous MCAMLIS authorization (November 2003) for the conversion of microfiche images to digital format. That amount is to be offset by the cancellation of the Disaster Recovery Project ($175,000)previously approved by MCAMLIS (May 2005). Increase is to come from the $1 retained fee. Motion was seconded by Mr. High. Vote 8-0

AYES: La Fave, High, Van Dunk, Anderson, Bennett, Olson, Nehmer, Place
NOES: None

ADDITIONAL ACTION: Motion by Mr. La Fave to approve a new authorization in the amount of $150,000 for improvements to Register of Deeds office computerized systems. Funding is to come from the $1 retained fee. Motion was seconded by Mr. High. Vote 8-0

AYES: La Fave, High, Van Dunk, Anderson, Bennett, Olson, Nehmer, Place
NOES: None

ADDITIONAL ACTION: It was the consensus of the Committee that Mr. La Fave come back at a future meeting with a detailed plan for his proposed project to make Register of Deeds data available over the internet.

New Business

A. Consideration of a 2006 agreement for MCAMLIS project management and map maintenance services between MCAMLIS and Milwaukee County DPPI. (65-2A-220)

ACTION: Motion by Mr. Bennett to approved the 2006 MCAMLIS project management and map maintenance services agreement. Motion was seconded by Mr. High. Vote 8-0

AYES: La Fave, High, Van Dunk, Anderson, Bennett, Olson, Nehmer, Place
NOES: None

B. Consideration of a 2006 agreement for MCAMLIS fiscal oversight between MCAMLIS and Milwaukee County DAS (copy to be distributed at meeting). (65-2A-245)

ACTION: Motion by Mr. Bennett to approved the 2006 MCAMLIS fiscal oversight services agreement. Motion was seconded by Mr. La Fave. Vote 8-0

AYES: La Fave, High, Van Dunk, Anderson, Bennett, Olson, Nehmer, Place
NOES: None

C. Consideration of a 2006 County Surveyor agreement between MCAMLIS and SEWRPC. (65-2A-280)

ACTION: Motion by Mr. Bennett to approved the 2006 MCAMLIS County Surveyor services agreement. Motion was seconded by Mr. High. Vote 8-0

AYES: La Fave, High, Van Dunk, Anderson, Bennett, Olson, Nehmer, Place
NOES: None

D. Consideration of possible MCAMLIS funding for purchase of county-wide license of Pictometry's oblique aerial photography. (65-2A-368)

ACTION: Consensus of the Committee to hold over this item until MCAMLIS staff can research this issue further.

E. Consideration of cost share proposal between MCAMLIS and United States Geological Survey (USGS) (copy to be distributed at meeting). (65-2A-456)

ACTION: Motion by Mr. Bennett to approved the proposed cost share agreement. Motion was seconded by Ms. Olson. Vote 8-0

AYES: La Fave, High, Van Dunk, Anderson, Bennett, Olson, Nehmer, Place
NOES: None

F. Discussion of the procedure to be followed for distribution of the 2005 digital orthophotography acquired through the Topographic Mapping Project. (65-2A-550)

ACTION: Have MCAMLIS Project staff prepare a report on the procedure for distribution of 2005 digital orthophotography and report back at next meeting

G. Consideration of a proposal by City of Milwaukee for map maintenance services of MCAMLIS cadastral data holdings residing within the city limits. (65-2A-580)

ACTION: Motion by Ms. Olson to have the City of Milwaukee prepare a contract for map maintenance services for the MCAMLIS cadastral map holdings within the boundaries of City of Milwaukee. Motion was seconded by Mr. High.

AYES: La Fave, High, Van Dunk, Anderson, Bennett, Olson, Nehmer, Place
NOES: None

H. The appointment of a nominating committee to recommend a slate of officers to the Steering Committee at its next regular meeting. (65-2B-404)

ACTION: Chairman Bauer appointed a Nominating Committee for the election of the 2006 MCAMLIS Steering Officers consisting of Mr. Bennett, Mr. Place, and Mr. High. Mr. Bennett was appointed Chair of the Nominating Committee.

AYES: La Fave, High, Van Dunk, Anderson, Bennett, Olson, Nehmer, Place
NOES: None

Date, time, and place of next meeting

ACTION: Consensus of the Committee that the next meeting should be scheduled on Tuesday, January 10th 2006 at 9:00 a.m. The place to be determined by MCAMLIS Project Staff.

Adjournment

ACTION: Motion by Mr. Bennett to adjourn. Motion was seconded by Ms. Olson.

AYES: La Fave, High, Van Dunk, Anderson, Bennett, Olson, Nehmer, Place
NOES: None

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MEMORANDUM

TO: MCAMLIS Steering Committee

FROM: SEWRPC Staff

DATE: January 6, 2006

SUBJECT: STATUS OF THE MCAMLIS 2005-2006 TOPOGRAPHIC MAPPING PROJECT

The Agreement between the MCAMLIS Steering Committee and the SEWRPC governing this project was executed on December 22, 2004, and work on this project has been underway since January 2005.

Aerial photography acquired in 2004 for Township 8 North, Ranges 21 East and 22 East, was processed during the first calendar quarter of 2005. All aerial photography required for the balance of Milwaukee County was obtained prior to April 15, 2005, and the processing of this aerial photography has also been completed.

As of December 31, 2005, about 97 percent of the digital orthophotography files had been delivered to the SEWRPC for its review. About 53 percent of these files had been reviewed and accepted by the SEWRPC staff as meeting the specifications for this work, and these files had been delivered to Milwaukee County (see attached map). These files are currently available through the County for distribution and use.

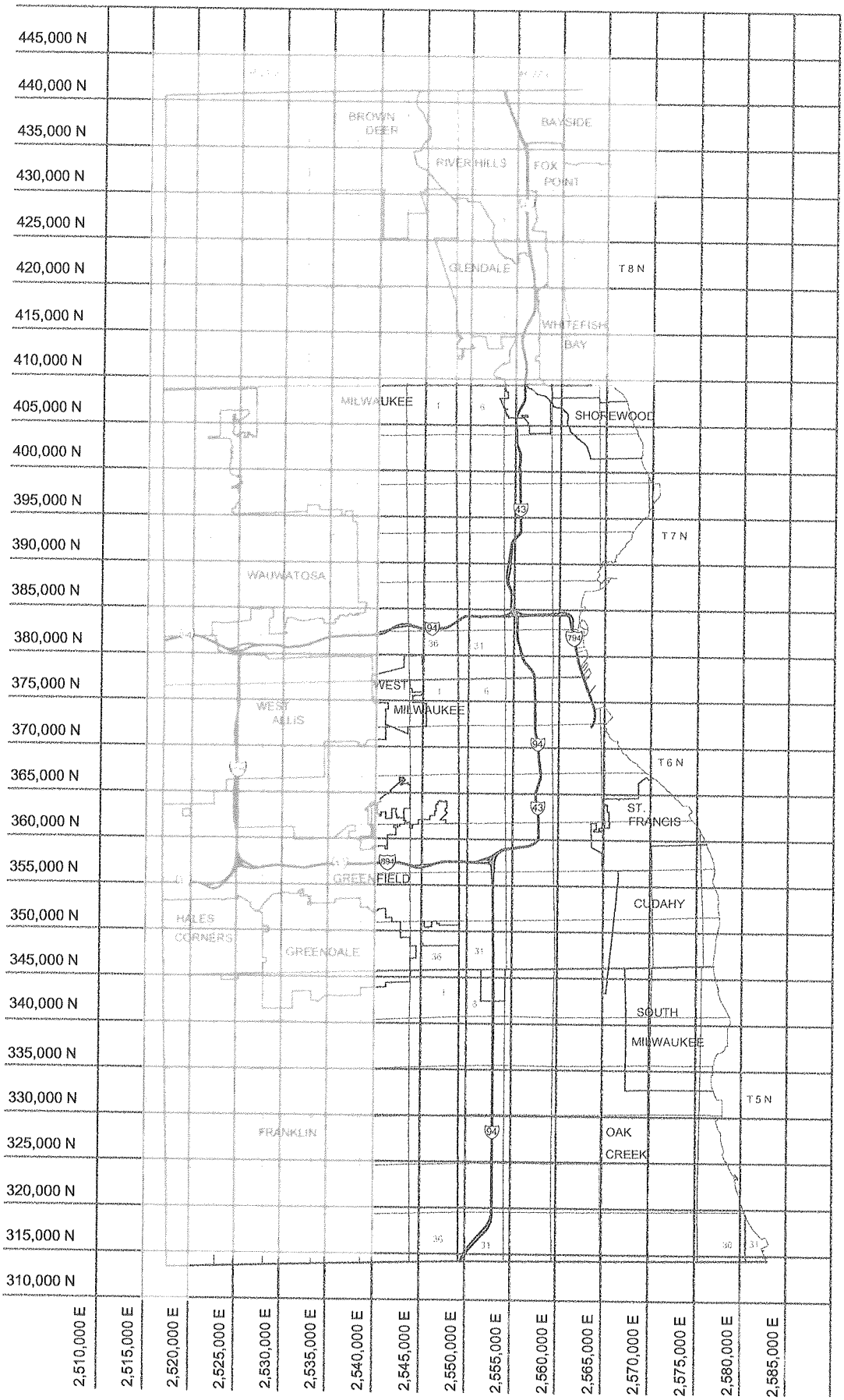
The digital topographic mapping portion of this project is also underway. The mapping for Township 8 North, Range 21 East and Township 8 North, Range 22 East, is currently about 85 percent complete and is expected to be available on a work flow basis beginning about April 1, 2006. The digital topographic mapping for Township 7 North, Range 21 East and Township 7 North, Range 22 East, is expected to be available on a work flow basis beginning about July 1, 2006. The digital topographic mapping for the remaining portions of the County (Township 5 North, Range 21 East, Township 5 North, Range 22 East and Township 5 North, Range 23 East; and Township 6 North, Range 21 East and Township 6 North, Range 22 East) is scheduled to begin compilation during early 2006 and is expected to be available on a work flow basis beginning about January 1, 2007. The Agreement between the MCAMLIS Steering Committee and the SEWRPC calls for this portion of the work to be completed by June 30, 2007.

* * * * *

Enclosure

TDP/lgh/mlh
01/04/06
#114427 V1 - Status Of MCAMLIS Mapping Project 12/05

2005 Orthophotography File Deliveries: Status as of December 31, 2005



Source: SEWRPC

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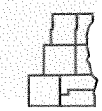


MEMORANDUM

TO: MCAMLIS Steering Committee

FROM: SEWRPC Staff

DATE: January 17, 2006

SUBJECT: STATUS REPORT NO. 3 ON REGIONAL WATER SUPPLY PLAN

This memorandum sets forth the progress made on the regional water supply planning program from October 1, 2005 through December 31, 2005. The preparation of the regional water supply plan represents the third, and final, element of the SEWRPC regional water supply planning program. The first two elements, comprising the development of basic groundwater inventories and the development of a groundwater simulation model for the Southeastern Wisconsin Region, were completed over the past several years. These first two elements involved interagency partnership programs with the U.S. Geological Survey, the Wisconsin Geological and Natural History Survey, the University of Wisconsin-Milwaukee, the Wisconsin Department of Natural Resources, and many of the water supply utilities serving the Region. The third, and final, step in the planning program, the preparation of the water supply plan, was initiated January of 2005.

Progress on the water supply plan has been focused on the study organization, continuation of basic study area inventories, and preliminary report preparation. On a separate parallel track, work has been largely completed on the new regional land use plan for 2035 which will serve as a basis for the development of the regional water supply plan. The 2035 land use plan, which is separately funded, is nearing completion, pending public hearings on the recommended plan.

Progress on the water supply plan is summarized in the attached Exhibit 1 and in the following paragraphs.

STUDY ORGANIZATION

As previously reported, a cooperative staffing arrangement is being used, involving the Southeastern Wisconsin Regional Planning Commission (SEWRPC) staff, consulting engineering and legal firms, and the groundwater technical staffs of the Wisconsin Geological and Natural History Survey (WGNHS), the U.S. Geological Survey (USGS), and the University of Wisconsin-Milwaukee. The contractual arrangements were completed on agreements with groundwater technical staffs and the consulting engineering firm for carrying out portions of the work.

ADVISORY COMMITTEE

The Regional Water Supply Planning Advisory Committee met November 30, 2005, to review the plan objectives, principles, and standards, as documented in the preliminary draft of Chapter V of the planning report. The objectives, principles, and standards were revised to reflect Committee comments.

BASIC STUDY AREA INVENTORIES

Work was continued on the inventory of water supply utility facilities, water use, and related information. Work was also continued by the engineering consultant on the inventories needed to document the state-of-the-art of water supply management.

PLAN OBJECTIVES AND STANDARDS

Work was completed on the development of the plan objectives and standards.

PLAN REPORT PREPARATION

The report outline; Chapter V, "Planning Objectives, Principles, and Standards," of SEWRPC Planning Report No. 52, *A Regional Water Supply Plan for Southeastern Wisconsin*, were prepared, reviewed by the Regional Water Supply Planning Advisory Committee, and revised to address the Committee review comments. As previously reported, Chapter I, "Introduction and Background," and Chapter II, "Description of the Study Area," have also been finalized.

OTHER ACTIVITIES

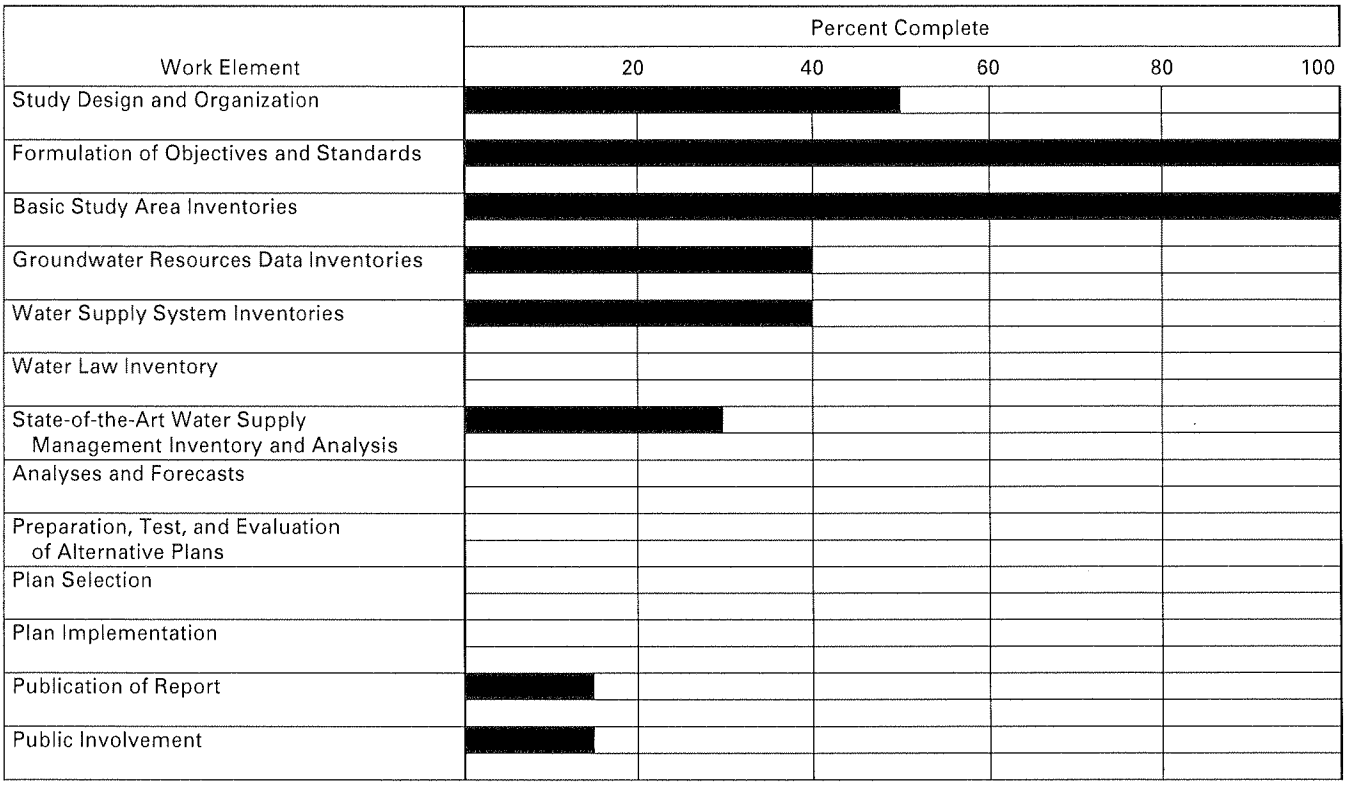
The Commission water supply planning web site has been maintained. The first of a series of newsletters covering important aspects of the planning program was completed. The Advisory Committee meeting minutes and report chapters will be placed on that site when finalized. The site also includes related presentations, reports, and other pertinent information.

* * *

#114997 V1 - MCAMLIS RWSP STATUS REPORT NO. 3
310-1001
RPB/pk

Exhibit 1

STATUS OF REGIONAL WATER SUPPLY PLAN: SEPTEMBER 30, 2005



#114997 V1 - MCAMLIS RWSP STATUS REPORT NO. 3
RPB/pk
01/17/05

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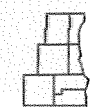


MEMORANDUM

TO: MCAMLIS Steering Committee

FROM: SEWRPC Staff

DATE: January 3, 2006

SUBJECT: **STATUS REPORT NO. 13 ON PHASE I OF THE MILWAUKEE COUNTY FLOODLAND MAPPING PROJECT**

This memorandum sets forth the progress made on Phase I of the Milwaukee County Floodland Mapping project from October 1, 2005 through December 31, 2005. That project phase includes all streams that are to be studied in the County, with the exception of those in the Root River watershed. This status report addresses project progress in the following three major areas:

- Data Acquisition
- Hydrologic and Hydraulic Modeling
- Floodland Map Preparation

Overall, the Phase I portion of the project is about 88 percent complete. Progress is summarized in the attached Exhibit 1 and is graphically summarized on the map attached hereto as Exhibit 2.

DATA ACQUISITION

During the period of October 1, 2005 through December 31, 2005, the following data acquisition activities were carried out:

- As indicated by Exhibit 1, data acquisition activities are substantially completed. When additional data needs are identified as work proceeds, the acquisition of the data is coordinated with the Milwaukee Metropolitan Sewerage District (MMSD), the Wisconsin Department of Natural Resources (WDNR), the Wisconsin Department of Transportation (WisDOT), and the pertinent communities.

HYDROLOGIC AND HYDRAULIC MODELING

During the reporting period, progress on hydrologic and hydraulic modeling for Phase I of the project included the following:

Milwaukee River Watershed

- The hydrologic and hydraulic modeling for Brown Deer Park Creek was completed.

- The hydrologic and hydraulic modeling for Beaver Creek was completed.

Fish Creek Subwatershed

- The hydrologic modeling of the Fish Creek subwatershed continued.

FLOODLAND MAP PREPARATION

Milwaukee River Watershed

- Preliminary draft floodplain boundaries were delineated along Brown Deer Park Creek for the 10-, 50-, 100-, and 500-year floods. A preliminary 100-year floodway boundary was also delineated.

- Work began on delineation of floodplain boundaries along Beaver Park Creek for the 10-, 50-, 100-, and 500-year floods.

PROPOSED SCHEDULE FOR COMPLETION OF PHASE I

The following factors have affected, and continue to affect, the schedule for completion of Phases I and II of this project:

- As maps have been completed, certain communities have requested that the Commission staff assist them in preparing detailed floodplain study submittals to the Wisconsin Department of Natural Resources (WDNR) and the Federal Emergency Management Agency (FEMA). Submittal of study information for agency approval is a an important component of the floodland management process and it is the logical next step in the process of local adoption of the updated floodplains/floodways for zoning and Federal approval for flood insurance.

  The MCAMLIS/ MMSD mapping project scope of work was developed based on the assumption that such adoption activities would take place after, not during, the MCAMLIS/MMSD project. Such submittals have been prepared for the Oak Creek watershed, at the request of the City of Oak Creek; the Lincoln Creek subwatershed, at the request of the City of Milwaukee; and the entire City of Brookfield. The Brookfield submittal was for stream reaches outside of the boundaries of the Milwaukee County mapping project, but it included Underwood Creek which flows through multiple communities and is also being addressed under the Milwaukee County project. Each of those submittals required a substantial commitment of staff time, and, because of specific deadlines set by the requesting communities, the Lincoln Creek and Brookfield submittals in 2004 required diverting four engineers from other projects for substantial periods of time. The new FEMA digital flood insurance rate map for Lincoln Creek, which is based on the study submittal described above and which reflects the MMSD stream restoration and flood control project, has now been issued, eliminating the Federal flood insurance requirement for about 2,000 properties.

- Because of other important new regional planning projects and longstanding commitments to provide review services for County governments, it has been necessary to assign engineering staff to those projects, reducing their availability for work on the floodplain mapping project. Such projects include the regional water quality management plan update (RWQMPU), analyses and evaluation of the MMSD Milwaukee County Grounds detention basin project as requested by Milwaukee County, hydraulic and scour analyses for new bridge designs which are done for the

City of Milwaukee, and stormwater and/or floodland management reviews that are done for Kenosha, Racine, and Waukesha Counties.

Some of the hydrologic model development work being done under the RWQMPU will be utilized in the floodland project. However, significant reallocation of SEWRPC engineering staff from other projects to the RWQMPU began in the fourth quarter of 2003 and continues to the present. That reallocation, coupled with the loss of one engineering staff position based on budget considerations has significantly affected the SEWRPC staff's ability to maintain the level of staffing on the MCAMLIS project which is necessary to meet the previously-envisioned project schedule.

- From 2001 through 2004, the SEWRPC staff coordinated with WDNR and FEMA to obtain consensus on acceptable criteria for continuous simulation hydrologic studies, such as those being used for many of the streams in the MCAMLIS/MMSD floodland mapping project area. That coordination has now reached a successful resolution, with agreement by WDNR, FEMA, and the SEWRPC staff on a sound set of guidelines. The SEWRPC staff was reluctant to expend MCAMLIS/MMSD floodplain mapping project resources on studies using continuous simulation hydrology until the technical criteria issues were resolved. Thus, for much of the four-year coordination period, specific work on continuous simulation hydrology was suspended. That suspension, coupled with the long time required to obtain agreement resulted in delay of the MCAMLIS/MMSD project.

- The main basis for Phases I and II of the floodplain mapping project is the hydrologic and hydraulic models that were developed by the MMSD and their consultants under Phases 1 and 2 of their watercourse system planning program. The MMSD models were developed for systems planning purposes and they are adequate for such purposes; however, they were not intended to be directly applicable for local zoning and Federal flood insurance purposes. The Commission staff has reviewed those models in detail and in many cases, we have found it necessary to obtain considerable additional information on hydraulic structures and to make significant, appropriate revisions to both the hydrologic and hydraulic models to bring them to Commission standards and the standards required for WDNR and FEMA approval.

In revising the schedule for completion of Phases I and II of the MCAMLIS/MMSD floodland mapping project, consideration was given to additional committed, or ongoing, projects, including a Milwaukee River main stem watercourse system planning project which is to be done for MMSD from mid-2006 through mid-2007. That project is an outgrowth of the MCAMLIS/MMSD floodland mapping project in that the hydraulic model developed under the MCAMLIS/MMSD project makes the Milwaukee River project possible.

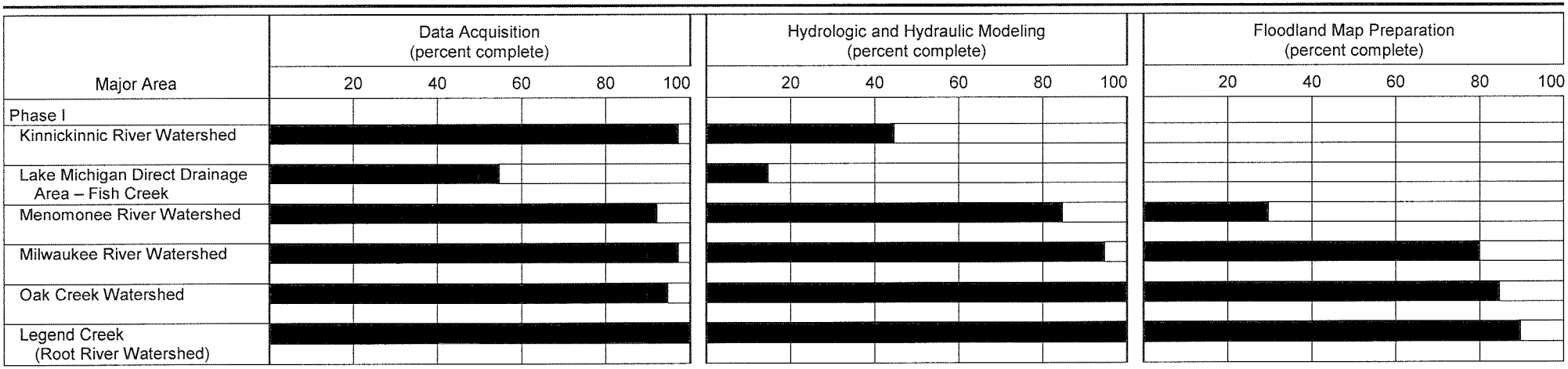
Given the foregoing, it is now proposed to complete Phase I of the floodplain mapping, including all studied streams in the Kinnickinnic, Menomonee, and Milwaukee River watersheds, by December 31, 2006.

* * *

#114107 V1 - MCAMLIS PH I MILW CTY FLPL STATUS RPT 13
PCE/MGH/pk

Exhibit 1

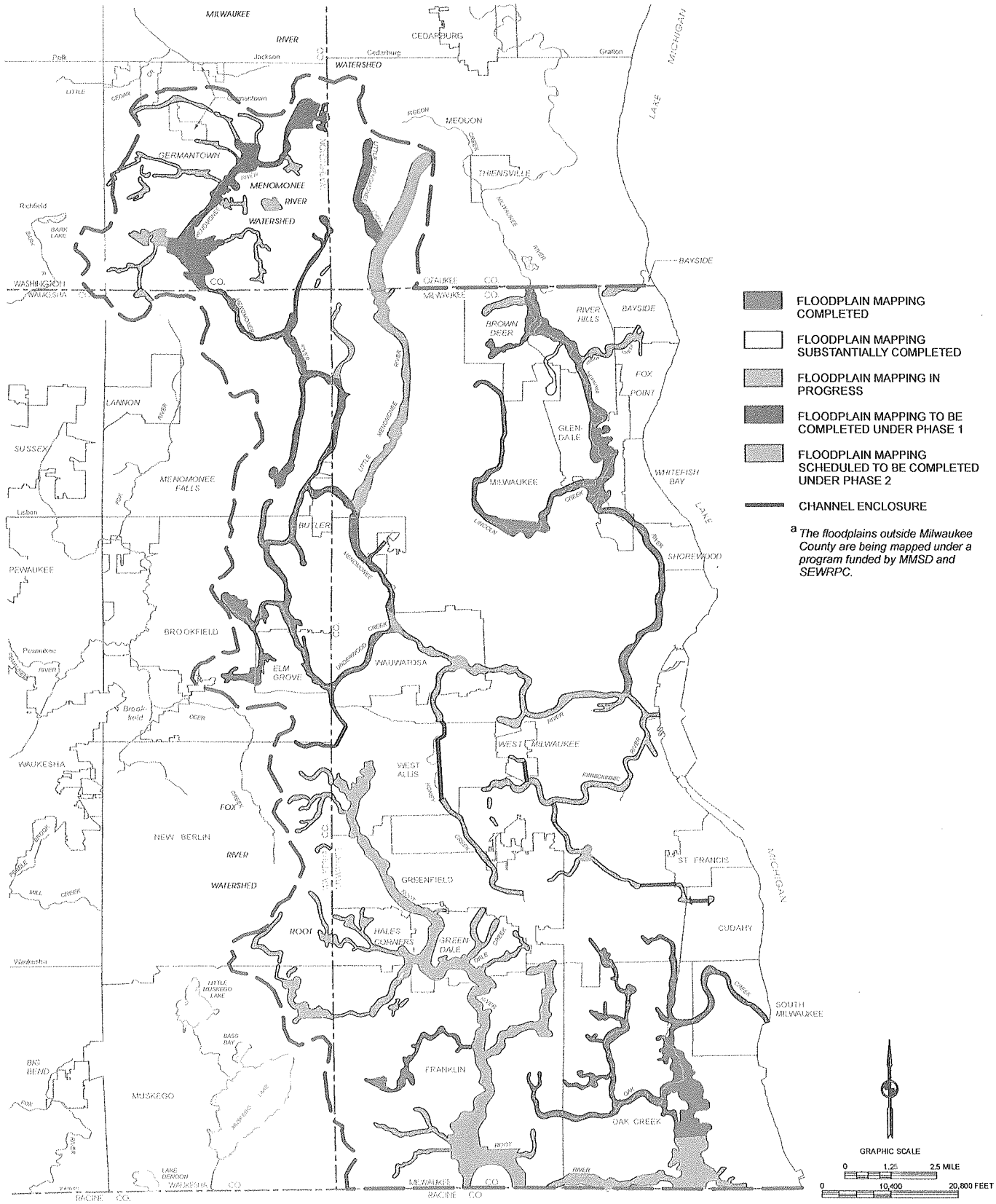
STATUS OF MCAMLIS PHASE I MILWAUKEE COUNTY FLOODLAND MAPPING PROJECT: DECEMBER 31, 2005



#114107 V1 - MCAMLIS PH I MILW CTY FLPL STATUS RPT 13
MGH/pk
01/03/06

Exhibit 2

STATUS OF FLOODPLAIN MAPPING IN MILWAUKEE COUNTY AND IN MENOMONEE AND ROOT RIVER WATERSHEDS OUTSIDE MILWAUKEE COUNTY:[a] DECEMBER 31, 2005



[a] *The floodplains outside Milwaukee County are being mapped under a program funded by MMSD and SEWRPC.*

Source: SEWRPC.

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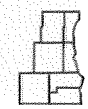


MEMORANDUM

TO: MCAMLIS Steering Committee

FROM: SEWRPC Staff

DATE: January 3, 2006

SUBJECT: **STATUS REPORT NO. 5 ON PHASE II OF THE MILWAUKEE COUNTY FLOODLAND MAPPING PROJECT**

This memorandum sets forth the progress made on Phase II of the Milwaukee County Floodland Mapping project from October 1, 2005, through December 31, 2005. That project phase includes the streams that are to be studied in the County in the Root River watershed except for Legend Creek, which was studied under Phase I. In general, status reports will address project progress in the following three major areas and they will also identify major issues that have arisen.

- Data Acquisition
- Hydrologic and Hydraulic Modeling
- Floodland Map Preparation

The modeling and map preparation stages of the project have not yet begun. Overall, the Phase II portion of the project is about 5 percent complete. Progress is summarized in the attached Exhibits 1 and 2. During the reporting period there was no work done on data acquisition, hydrologic and hydraulic modeling, or floodland map preparation.

PROPOSED SCHEDULE FOR COMPLETION OF PHASE II

The following factors have affected, and are continuing to affect, the schedule for completion of Phases I and II of this project:

- As maps have been completed, certain communities have requested that the Commission staff assist them in preparing detailed floodplain study submittals to the Wisconsin Department of Natural Resources (WDNR) and the Federal Emergency Management Agency (FEMA). Submittal of study information for agency approval is a an important component of the floodland management process and it is the logical next step in the process of local adoption of the updated floodplains/floodways for zoning and Federal approval for flood insurance.

The MCAMLIS/MMSD mapping project scope of work was developed based on the assumption that such adoption activities would take place after, not during, the MCAMLIS/MMSD project. Such submittals have been prepared for the Oak Creek watershed, at the request of the City of Oak Creek; the Lincoln Creek subwatershed, at the request of the City of Milwaukee; and the entire City of Brookfield. The Brookfield submittal was for stream reaches outside of the boundaries of the Milwaukee County mapping project, but it included Underwood Creek which flows through multiple communities and is also being addressed under the Milwaukee County project. Each of those submittals required a substantial commitment of staff time, and, because of specific deadlines set by the requesting communities, the Lincoln Creek and Brookfield submittals in 2004 required diverting four engineers from other projects for substantial periods of time. The new FEMA digital flood insurance rate map for Lincoln Creek, which is based on the study submittal described above and which reflects the MMSD stream restoration and flood control project, has now been issued, eliminating the Federal flood insurance requirement for about 2,000 properties.

- Because of other important new regional planning projects and longstanding commitments to provide review services for County governments, it has been necessary to assign engineering staff to those projects, reducing their availability for work on the floodplain mapping project. Such projects include the regional water quality management plan update (RWQMPU), analyses and evaluation of the MMSD Milwaukee County Grounds detention basin project as requested by Milwaukee County, hydraulic and scour analyses for new bridge designs which are done for the City of Milwaukee, and stormwater and/or floodland management reviews that are done for Kenosha, Racine, and Waukesha Counties.

  Some of the hydrologic model development work being done under the RWQMPU will be utilized in the floodland project. However, significant reallocation of SEWRPC engineering staff from other projects to the RWQMPU began in the fourth quarter of 2003 and continues to the present. That reallocation, coupled with the loss of one engineering staff position based on budget considerations has significantly affected the SEWRPC staff's ability to maintain the level of staffing on the MCAMLIS project which is necessary to meet the previously-envisioned project schedule.

- From 2001 through 2004, the SEWRPC staff coordinated with WDNR and FEMA to obtain consensus on acceptable criteria for continuous simulation hydrologic studies, such as those being used for many of the streams in the MCAMLIS/MMSD floodland mapping project area. That coordination has now reached a successful resolution, with agreement by WDNR, FEMA, and the SEWRPC staff on a sound set of guidelines. The SEWRPC staff was reluctant to expend MCAMLIS/MMSD floodplain mapping project resources on studies using continuous simulation hydrology until the technical criteria issues were resolved. Thus, for much of the four-year coordination period, specific work on continuous simulation hydrology was suspended. That suspension, coupled with the long time required to obtain agreement resulted in delay of the MCAMLIS/MMSD project.

- The main basis for Phases I and II of the floodplain mapping project is the hydrologic and hydraulic models that were developed by the MMSD and their consultants under Phases 1 and 2 of their watercourse system planning program. The MMSD models were developed for systems planning purposes and they are adequate for such purposes; however, they were not intended to be directly applicable for local zoning and Federal flood insurance purposes. The Commission staff has reviewed those models in detail and in many cases, we have found it necessary to obtain considerable additional information on hydraulic structures and to make significant, appropriate revisions to both the hydrologic and hydraulic models to bring them to Commission standards and the standards required for WDNR and FEMA approval.

In revising the schedule for completion of Phases I and II of the MCAMLIS/MMSD floodland mapping project, consideration was given to additional committed, or ongoing, projects, including a Milwaukee River main stem watercourse system planning project which is to be done for MMSD from mid-2006 through mid-2007. That project is an outgrowth of the MCAMLIS/MMSD floodland mapping project in that the hydraulic model developed under the MCAMLIS/MMSD project makes the Milwaukee River project possible.

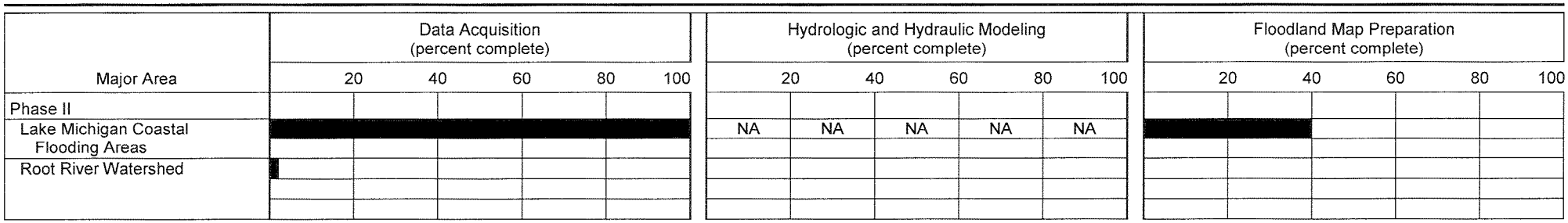
Given the foregoing, it is now proposed to commence additional work on Phase II of the floodplain mapping immediately after completion of Phase I on December 31, 2006 and to complete Phase II work by June 31, 2008.

* * *

#114110 V1 - MCAMLIS PH II MILW CTY FLPL STATUS RPT 5
PCE/MGH/pk

Exhibit 1

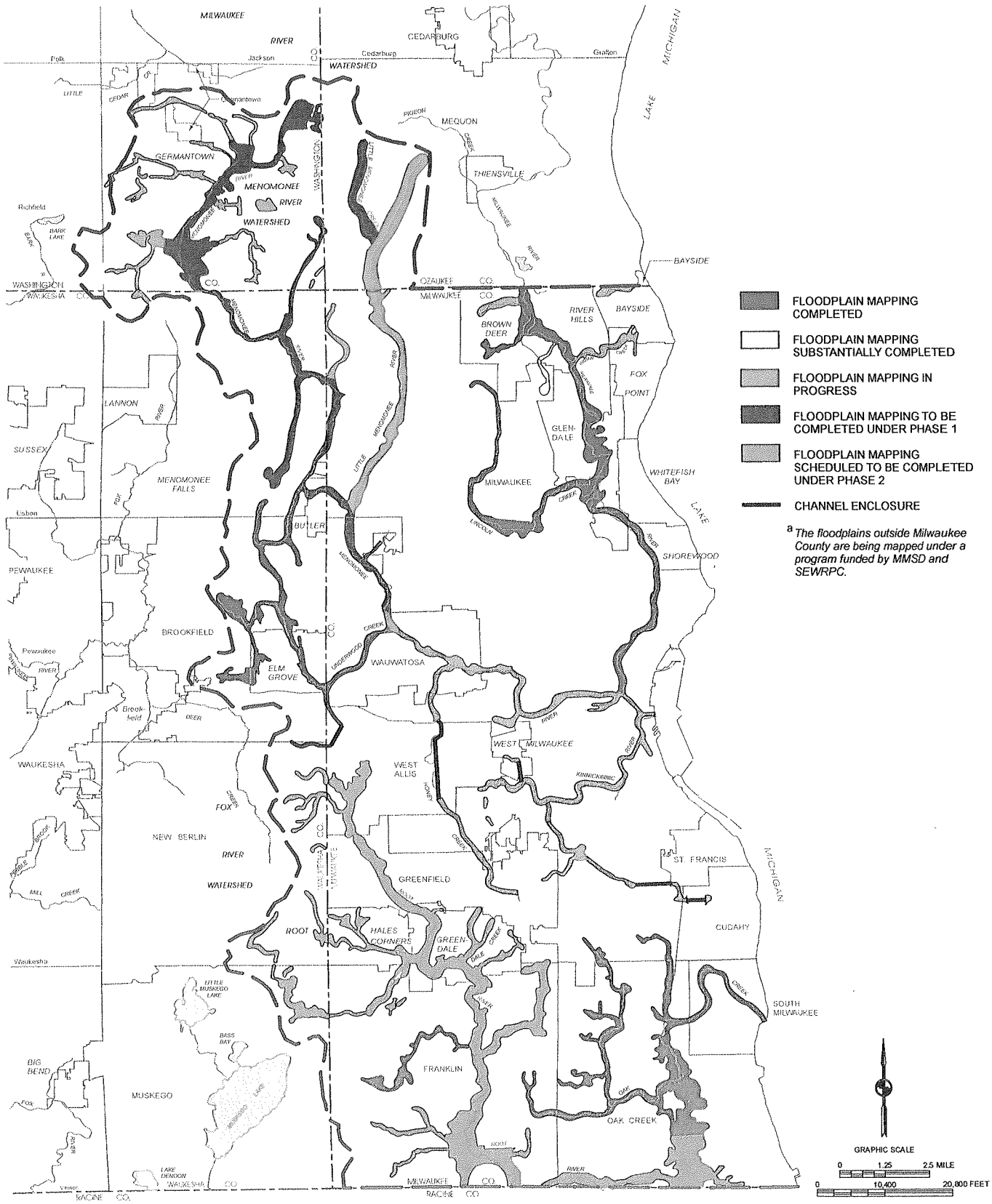
STATUS OF MCAMLIS PHASE II MILWAUKEE COUNTY FLOODLAND MAPPING PROJECT: DECEMBER 31, 2005



#114110 V1 - MCAMLIS PH II MILW CTY FLPL STATUS RPT 5
01/03/06

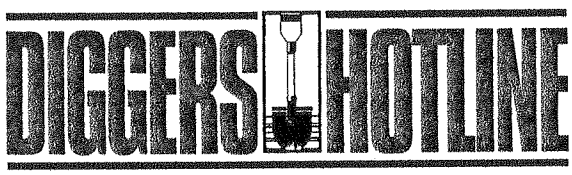
Exhibit 2

STATUS OF FLOODPLAIN MAPPING IN MILWAUKEE COUNTY AND IN MENOMONEE AND ROOT RIVER WATERSHEDS OUTSIDE MILWAUKEE COUNTY[a] DECEMBER 31, 2005



[a] *The floodplains outside Milwaukee County are being mapped under a program funded by MMSD and SEWRPC.*

Source: SEWRPC.



DIGGERS HOTLINE PROTOTYPE DRAFT REPORT

February 7, 2006

DIGGERS HOTLINE

Date: January 27th, 2006

To: Milwaukee County Automated Mapping and Land Information System (MCAMLIS) Steering Committee

From: Mr. Bennet G. Zweifel, Vice President, Operations
Diggers Hotline, Inc.

Re: Prototype Study, Diggers Hotline

I would like to begin by thanking the MCAMLIS Steering Committee for approving this project. Our expectation is that having a more current street information database will reduce service interruptions and improve customer safety for all constituents in Milwaukee County. This will ultimately lower or at least stabilize one-call costs for municipalities and utilities.

I would also like to comment briefly on the successful results of the prototype project. Our personnel have reviewed the test results of the project and are encouraged by the fact that a translator converting existing MCAMLIS and City of Milwaukee data to the Diggers Hotline MapInfo database format was successful. The translator also converted information from new subdivision plats provided by the City of Franklin. Our Member Companies may now consider how to best apply the results of this pilot project. With some dedication, the potential is there to be able to implement a process such as this throughout the statewide one-call system.

Thank you again,

14100 W. National Avenue • New Berlin, WI 53151-4529
(262) 785-5300 • 800-982-0299 • FAX (262) 785-5360

DIGGERS HOTLINE

TABLE OF CONTENTS

DIGGERS HOTLINE PROTOTYPE
DRAFT REPORT

PROJECT SUMMARY

Introduction

Over the past several years, there have been a number of opportunities for organizations to use the Milwaukee County Automated Mapping and Land Information System (MCAMLIS) for the benefit of constituents in Milwaukee County. Most recently, and at the request of the utility members of MCAMLIS, the full Steering Committee gave approval to Diggers Hotline to proceed with a project to integrate the MCAMLIS database into the Diggers Hotline land information system. A prototype study was to be conducted to produce a tested set of specifications and a recommended process to facilitate the timely inclusion of new land subdivision plats and certified survey map data into the Diggers Hotline database. While the project was to address a number of different issues the focus of the prototype was to be on updating the Diggers Hotline land information system as soon as municipalities issue permits or approvals that allow the developers to begin construction.

The investigation has been completed and the results are set forth in this draft report to the MCAMLIS Steering Committee. It should be noted that a successful process could not have been developed were it not for the geodetic reference framework that has been developed in Milwaukee County and Southeastern Wisconsin.

Background

Protection of infrastructure from contractor damage resulting in service interruption and risk to public safety is of great concern to utilities and municipalities. To prevent infrastructure damage and to simplify the notification of all organizations with buried facilities, one-call entities such as Diggers Hotline Wisconsin have been established to process requests for locating and marking of buried utility and municipal infrastructure.

To facilitate the processing of requests through the one-call center, Diggers Hotline has implemented various technologies including the use of electronic mapping information software to help the operators at the call center pinpoint the location requests from outside callers. While positionally accurate street and real property boundary line

information is important, the greatest need by the call center is for current street mapping information. Diggers Hotline faces a constant challenge to add new information such as land subdivisions, street additions and municipal annexations to their database as quickly as possible.

The fact that under existing procedures many subdivisions or street changes cannot be added to the Diggers Hotline database until after a year has passed has created problems for the processing of location requests. The missing street information has caused delays in processing the requests and resulted in locating errors. In some instances the lack of current information has resulted in damages to infrastructure and a risk to individual safety. Ultimately, the problems have resulted in higher locating costs and in turn been passed on to the constituents or customers.

Scope of Project

The project was to determine how to best integrate the MCAMLIS database with the current Diggers Hotline land information system. The prototype process was to include the development of software that could merge geo-referenced files generated from different software products and demonstrate the ability to integrate data with different software origins and positional accuracies into the Diggers Hotline database. The task was intended to result in a comprehensive set of electronic database standards and specifications by which land surveyors employed by land owners and developers could comply with when submitting proposed subdivision plats and certified survey maps for community approval.

The project was also intended to investigate the use and benefit of layered Portable Document Format (PDF) files that could facilitate the transfer of updated land information to the Diggers Hotline and the utilities databases. The PDF format was to provide easy access of information through the Internet and the use of the free Adobe software.

Data Requests

Requests were made to all of the utilities and to Diggers Hotline for samples of data in the pilot area. The area selected for the pilot/prototype included the East one-half of U.S. Public Land Survey Section 8 and the West one-half of Section 9 in Township 5 North Range 21 East, City of Franklin. This area was selected because of recent platting additions in the area and would thereby provide a more rigorous application of the prototype process.

All of the land files were loaded and compared for positional differences. Interestingly, the positional accuracy of all information including Diggers Hotline data matched relatively closely.

Interviews

Diggers Hotline

After loading the data from the utilities, municipalities and Diggers Hotline, interviews were scheduled with all of the interested parties to gain an understanding as to their data requirements and data formats. Discussions with Diggers Hotline staff indicated that their data requirements were actually quite basic and this eliminated concerns about edge matching the more accurate MCAMLIS data with the less accurate existing data from Diggers Hotline.

Another important finding was the fact that there is no network connectivity or intelligent ties between street segments in the Diggers database. In other words, each street segment from intersection to intersection is an entity of its own. The importance of this is that the current Diggers Hotline database structure will allow the MCAMLIS data to be merged with the Diggers land information system without making rigorous ties between bordering or joining streets and without having to be concerned whether there may be alignment differences. This may not be so important in Southeastern Wisconsin where the mapping information is positionally accurate but it may be important when working with other counties where mapping information could be suspect.

Utilities

It was found that the utilities require significantly more land information and the intelligence behind that information is much more complicated. Currently, the utilities take whatever information is provided from surveyors and digitize that information into their particular format for use in their software platform.

Important in this respect is the fact that the information must be vectorized. Consequently, geo-referenced raster images such as layered PDF files would have little value except as a source document to use for digitizing and future reference.

Surveyors

Discussions were had with several registered land surveyors, the Executive Director of the Wisconsin Society of Land Surveyors and a staff member from the Wisconsin Department of Administration Plat Review Committee. The discussion focused on whether there was an opportunity to establish a detailed standard that all surveyors could conform to when submitting new subdivision plats and certified survey maps. The reaction of the surveyors to the establishment of a standard was not positive. It was their opinion that a standard would require significant changes in the practices followed by their organizations and would result in additional costs to them. It is important to note that they did not say that a standard couldn't be established but rather that there would be significant costs that would have to be absorbed by the surveyor and/or developer.

The surveyors did agree however that it would not be difficult for them to provide an electronic file with centerlines, node points and street names that would be associated to the centerline segments. The new information would be referenced to at least two monumented corners of the U.S. Public Land Survey system that have attached State Plane Coordinate positions. The geo-referenced tie to the State Plane Coordinate System would allow for the automated placement of a new subdivision plat or certified survey map into the Diggers Hotline land information system.

Once approval of a subdivision plat or certified survey map is given by the municipality concerned, available address range information would be provided by the municipality to Diggers Hotline in electronic format.

City of Milwaukee

Discussions with the City of Milwaukee confirmed the discussions with the surveyors. It would be costly for the City to conform to a standard that would be different from the one currently in use. The City of Milwaukee also agreed that the information requirement for Diggers Hotline would be easy to comply with and that the City could adopt a change to a current ordinance that would require that the geo-referenced information be provided by surveyors.

Portable Document Format (PDF)

Based upon earlier discussions with municipalities, there was thought that implementing a process of plat approval using Portable Document Format (PDF) files would provide a source of information that could be used to update the land information for Diggers Hotline and the utilities. However, because of the need for vector information by the utilities and Diggers Hotline, the idea of using PDF files for updating the Diggers Hotline database and the land information systems for utilities was not considered a viable solution for this project.

Data Standard

The issue of creating a standard for submitting all information on plats was given consideration throughout the project. From various discussions it was determined that the effort would be significant and the tasks to complete such an undertaking would result in considerable costs to the surveyors and/or developers. While a comprehensive standard would ultimately provide multiple benefits and would certainly be a worthwhile undertaking, it was decided that the project would require a separate work initiative and funding.

As noted from the discussions with the land surveyors, it was agreed that it would not be difficult for them to provide an electronic file with centerlines, node points and street names that would be associated to the centerline segments. The new information would

be referenced to at least two monumented corners set in the Government survey and would facilitate the automated integration of new land information with the existing Diggers Hotline database.

RESULTS

Translator

With a clear understanding of the data requirements for Diggers Hotline a translator was produced to integrate the MCAMLIS database with the Diggers Hotline database. Two principal objectives were to be met by the translation prototype. First, deliver a prototype dataset containing centerlines with address range information compatible with the Diggers Hotline MapInfo format. Second, demonstrate the ability to integrate the MCAMLIS data with the Diggers Hotline system by designing a repeatable, automated process.

Prototype

The translator successfully converted existing MCAMLIS and City of Milwaukee shape files to the Diggers Hotline MapInfo format. The translator also converted information from new subdivision plats provided by the City of Franklin. The new file format used for translating the Franklin information serves as the standard for surveyors to follow when submitting new subdivision plats or certified survey maps to municipalities. The standard also provides the format for municipalities to follow when adding address range information to the geo-referenced centerline files.

CONCLUSIONS

The prototype study was successful in producing a tested set of specifications and a recommended process to facilitate the timely inclusion of new land subdivision plats and certified survey map data into the Diggers Hotline MapInfo system. During interviews with surveyors, engineers and municipal personnel, it was agreed that they could produce data according to the format specifications developed to meet the MapInfo requirements.

RECOMMENDATIONS

The consultant recommends that Diggers Hotline embark on a process to educate the units of government concerning the importance and benefit of maintaining an accurate and current mapping system. Additionally the consultant recommends that the municipalities cooperate with Diggers Hotline by regularly providing new geo-referenced street and address information. Furthermore, the consultant recommends that Diggers

Hotline act to endorse and promote the concept of municipalities requiring surveyors to provide geo-referenced street centerline data in the specified MapInfo format.

Based on the success of the prototype, the consultant also recommends that Diggers Hotline expand the process to cover all of Milwaukee County, Southeastern Wisconsin and the balance of the State. To accomplish this the following items need to implemented:

- That each municipality concerned enact an ordinance that requires surveyors to submit specified information from their plats for Diggers Hotline and in the format established for the prototype. Diggers Hotline should work with units of government to promote the importance of accurate mapping information and provide a sample ordinance for the community to enact. The ordinance would contain the tested specifications resulting from the prototype.

- Since subdivision plat approval is primarily a municipal responsibility, the municipality will e-mail to Diggers Hotline a shape file containing the required street data and formatted according the prototype specification. Diggers Hotline will then translate the shape file data to the MapInfo format using translation software.

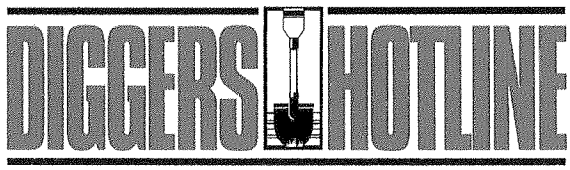
- For the units of government not possessing the GIS tools or CAD technology or staff to process the data into MapInfo format, either Diggers Hotline or a sub-contractor will perform the translation

- Diggers Hotline management team and Board of Directors need to develop a timeline and related budget to implement the program on a local, regional and statewide basis. A determination will need to be made as to how quickly the implementation should proceed. What makes the solution doable is the fact that the process can be phased in by community, groups of communities or counties.

Finally, and most important, Diggers Hotline personnel have reviewed the data and the findings, tested the process and are satisfied with the results. The focus is now on defining a time line and allocating funds for statewide implementation.

PROPOSED MCAMLIS INITIATIVE

As a final thought, and based on numerous interviews with surveyors, engineers and utility personnel, the consultant recommends that MCAMLIS fund a study to develop a comprehensive standard or translator that effectively produces digital information from land subdivision plats that matches the current MCAMLIS data structure format. The standard would have far reaching benefit for the County, the utilities and Diggers Hotline.



DIGGERS HOTLINE PROTOTYPE
DRAFT REPORT

Introduction

For the past several months, a study has been underway to identify opportunities for improving the accessibility and distribution of new subdivision plats and certified survey maps to Diggers Hotline and utilities in Milwaukee County. Based on discussions with personnel from the City of Franklin, AT&T (SBC), We-Energies and Diggers Hotline, a preliminary investigation was started for a solution to the following issues:

- Automate the distribution of new land developments and annexations to utilities
- Provide an automated and timely update of land information to Diggers Hotline

The investigation started with the considered use of software that would geo-reference files generated from different software products such as AutoCad and MicroStation. The software would also separate the feature information into layers and allow for that information to be referenced from Portable Document Format (PDF) files using Adobe Acrobat software.

The expectation was that the software and establishment of a process that would produce land information that would conform to an agreed upon standard would result in the timely distribution of land information to the major users including utilities, municipalities and Diggers Hotline. The timely updates of land information would provide significant cost savings for ratepayers and customers by facilitating the field locating process of infrastructure at the one-call center and reducing the number of locating requests that are routed to the municipalities and utilities in the County.

From the initial investigation, it was concluded that prototyping the process in one or more of the communities in Milwaukee County would be the best way to proceed with the study. The study would produce a final report to the Milwaukee County Automated Mapping and Land Information System (MCAMLIS) Steering Committee that would address the findings and recommendations on how to proceed with implementation for Milwaukee County. A prototype would produce a tested set of specifications and process flow to facilitate the geographic information system (GIS) update requirements for the remaining units of government in Milwaukee County, the utilities and Diggers Hotline.

Considering that the process could benefit all of the municipalities and utilities in Milwaukee County and ultimately become a timely source of information for the County land information system, a request to the MCAMLIS Steering Committee to fund the study and development of a prototype was approved.

The MCAMLIS Steering Committee agreed that the study would determine whether an electronic process for updating Diggers Hotline and the utilities would reduce the time and effort required by the one-call operators to handle new requests for locating services. This savings in time would result in cost savings to the call center, municipalities and utilities.

The prototype could also result in the development of a process that would provide updated land information to the utilities and Diggers Hotline for inclusion in their land information systems. The process could allow for the updates to be integrated electronically into multiple land information systems that reside at the utilities and Diggers Hotline. Ideally, the integration would occur with minimal work effort by utility or Diggers Hotline personnel.

Having current land information would improve safety, reduce the number of locate requests forwarded to the utilities and shorten the time required for Diggers Hotline to process the locate requests. The improved process could also shorten the time required for the locating contractors to complete the marking of facilities because in many instances, the area for locating could be reduced to specific street locations.

Finally, minimizing the number of locating requests forwarded to the utilities and municipalities would reduce the charges by Diggers Hotline to the municipalities and utilities and thereby reduce the costs charged by the locating contractors. The reduced charges from the locating contractors would ultimately benefit the constituents and ratepayers.

Background

Municipalities, utilities and other users of maps and records have historically faced the challenge of accessing the most accurate and current land information to fulfill their own business requirements. As providers of land information, surveyors have applied their best practices to accurately report and record the legal property descriptions. Units of government have taken that information and produced maps that have scaled as accurately as possible to the dimensions provided from the recorded surveys.

For the past two decades, mapping professionals have focused a significant effort on developing solutions that could automate the capture of surveying information and the mapping of that land information to a geo-coded database. The introduction of different GIS solutions and the development of various computer mapping software products that electronically transfer or accept global positioning system (GPS) data files have provided the tools for producing precision maps in a significantly shortened timeframe. More recent advancements in the use of GPS technology have also improved the electronic

capture and recording of land information. The improved GPS technology and mapping system software has contributed to very accurate mapping systems for most major utilities and many municipalities in Wisconsin.

While the major utilities and some municipalities have invested in sophisticated GIS technology and committed the resources to integrate their infrastructure with the available accurate land information, other users of land information including many communities and Diggers Hotline, simply do not have the resources to maintain their landbase and benefit from the use of GIS technology. The problems that Diggers Hotline has had to contend with focuses not so much on the positional accuracy of the land information but primarily on the timeliness of information and the delays it encounters with receiving update notifications and incorporating changes into the system that they have.

Diggers Hotline for example, often times needs to take information or prints provided by utilities and municipalities, and remap that information to best fit their existing database. This translates to a significant amount of duplication in effort and frequently results in a land information database that is, at best, a schematic representation of the new development or change. More important however is the fact that the land information is not current.

The prototype would explore different processes for updating the Diggers Hotline database. The process would include a study into the use of layered PDF CAD files. Finally, the prototype would explore the importance of establishing a standard that would facilitate the exchange of electronic information between various GIS software platforms.

Diggers Hotline

One of the organizations with the greatest need for current land information is Diggers Hotline, the statewide one-call notification system for Wisconsin. Keep in mind that Diggers Hotline is a *not for profit* organization that provides a coordinated service for municipalities and utilities. Using MapInfo software and NAVTEQ land information, Diggers Hotline is challenged with the task of tracking all of the utility franchise areas defined by its utility member organizations, maintaining changes to boundary lines resulting from annexations, and finally, updating new streets that have been added as a result of municipality approvals for new subdivision plats and certified survey maps.

Consequently, Diggers Hotline has an urgent need for the new land information resulting from plans submitted and approved by municipalities for developers, builders and other landowners. As planning and actual construction proceeds, numerous calls are received for locates in those areas and Diggers Hotline frequently does not have current information and sometimes only a general knowledge of where those streets are located.

The entire issue of current land information for Diggers Hotline is particularly frustrating when one considers that many of the members of the one call system already have that

critical information in their own GIS as a result of their individual and internal mapping procedures and resources. Diggers Hotline however, does not have the resources to maintain its land database to that same desired level of currency. It is important to keep in mind again that Diggers Hotline serves the entire State of Wisconsin. The investigation identified a number of problems that this has caused the member organizations, requesting parties, and constituents:

- Diggers Hotline is frequently asked to distribute locate requests to municipalities and utilities for areas or streets that have not been mapped in the database. Furthermore, annexations may not be reflected in the Diggers Hotline database so the street (if it does appear) may only be shown in the wrong municipality. This results in many tickets being unnecessarily issued and charged to utilities where there is no need for a locate ticket because the street is only located in one municipality. The locating contractors in turn spend more time determining whether there is a need for their marking service because their utility maps may clearly show the streets that need to be marked and the municipality that they are located in. This extra effort contributes to the cost per locate and additional charges back to the utility. In other words, if the Diggers Hotline database were mapped with all of the new street locations, the request process and location process would be more efficiently handled and the cost per locate could be reduced.

- When requests are made for areas that are not included in the Diggers Hotline database, the general area for the request is often times expanded to ensure that the error is on the side of caution. Municipalities and utilities or the locating contractors are then responsible for pinpointing and isolating the specific area where the conflict may occur. This ultimately requires the municipality or locating contractor to sort through those requests and match to their utility maps to determine whether marking is necessary. The result again is that the municipality and utility often times pays for more transmittals and locates than would be necessary if Diggers Hotline had a more accurate mapping database.

- Unnecessary transmittals or requests actually cause delays and increases the amount of time that it should take to respond to a locate request. When large areas are requested, the locating contractor often times marks facilities that may not be close to the potential conflict.

- Poor or outdated information concerning annexations results in a number of miscommunications and delays in correctly processing transmittals to the appropriate utility and municipality. In fact, this often results in two locate requests that are issued for the correct municipality and the wrong municipality.

In summary, the database used by Diggers Hotline results in a number of unnecessary transmittals and locate costs that are passed on to the municipalities and private utilities. Furthermore, the transmittals that are issued for areas larger than necessary result in

wasted manpower. While the costs are initially paid for by the municipalities or utilities, they are ultimately passed along to the constituents and ratepayers.

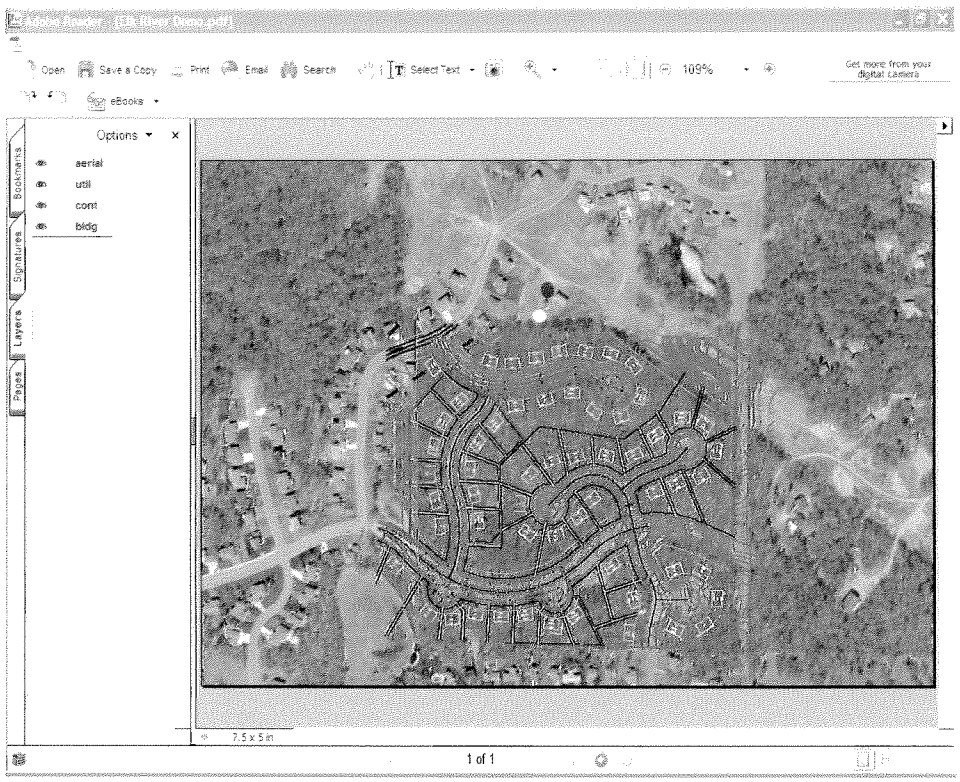
Prototype

Without question there has long been a need for a process to be developed that would improve the updating of land information for Diggers Hotline. Now, the expectation is that with new software applications and new translators, it would be possible to take information that originates in an AutoCAD, MicroStation, GE Smallworld, or ARC/INFO environment and import that data into a different platform such as the MapInfo system used by Diggers Hotline. A prototype would produce a process that would allow for the electronic exchange of information with minimal interaction of the personnel who are either sending or receiving the information. The prototype and investigation would also explore other recent technological developments that have now positioned users of GIS to address the obstacles that prevented the exchange of land information, updates, and notations. The expectation was that creating an exchange standard would facilitate the exchange of information needed by Diggers Hotline.

Layered Portable Document Format (PDF) Files

The prototype would also explore the use of enhanced Portable Document Format (PDF) electronic documents that could provide an opportunity for the exchange of information between various users of the information regardless of GIS sophistication or the application and platform used to create the information. Important to this process is the fact that PDF files are compact and complete, and can be shared, viewed and printed by anyone using Adobe Reader software that can be downloaded off of the Internet at no cost. While PDF files are, for the most part, only a visual product that aids in the communication process, the technology could, along with a set of standard formats developed during the prototype, provide the solution for Diggers Hotline.

The following is an example of a geo-referenced PDF file. It illustrates a subdivision that has been layered on top of a digital orthophotograph. The fact that it is layered means that selected items from the subdivision plats could be sent to Diggers Hotline for their land information system.



Example of PDF Layered File

Anticipated Benefits

The new process would allow for proposed drawings to be distributed electronically over the Internet to Diggers Hotline and updated again when approval is given to proceed with the development. On the other hand, the process could be established so that only the approved plan would be forwarded to the utilities and Diggers Hotline.

Based on the research that had already been completed and the encouraging results of that investigation, the prototype could result in a recommended process for updating Diggers Hotline and others in need of new land developments and annexations. The process could also result in a format or standard that would facilitate the integration of new land information with the existing mapping systems used by the major utilities. At a minimum, the process would improve the locating services provided by Diggers Hotline and that would result in cost savings to the utilities and constituents.

Whether the Adobe PDF files could actually be used or if another solution would need to be developed, the prototype would, at a minimum, produce a solution and process that would resolve the dilemma that Diggers Hotline has. Whatever course taken for the solution, the potential benefits would include the following:

- The process will improve the communication of land information to utilities as soon as approval of a subdivision plat is given.

- The process will facilitate the updating of Diggers Hotline land information database and result in fewer transmittals to municipalities and utilities. Fewer transmittals would reduce the costs from Diggers Hotline and locating contractors.
- The new process would reduce the work effort by Diggers Hotline personnel to keep their land information system current.

There would be an incentive for the land surveyors and developers to provide the information in electronic format and to the specifications determined as a result of the prototype. Developers are anxious to get approval for their subdivision plats and having the platting information conform to the electronic standard would speed up the process of giving that approval. Municipalities could also consider passing an ordinance that would require the information in a standard format. In fact, most plans that are submitted to municipalities are already in an electronic format but not to an agreed upon standard. A standard and agreed upon format would be one of the deliverables of the prototype.

Prototype Process

The Consultant would conduct a number of interviews with individuals from Milwaukee County, municipalities in Milwaukee County, Diggers Hotline, and all of the utilities to gain a thorough understanding of the data requirements for each and their current mapping environment. One municipality in Milwaukee County that had high growth would be recruited to participate in the study. While the intent would be to develop a process that could support the updating of land information for all of Wisconsin counties and municipalities, improvements for just Milwaukee County would result in significant benefit to the municipalities, utilities, member organizations of Diggers Hotline and the constituents of Milwaukee County. The prototype and study would result in a report and recommendation on how to best proceed with the balance of communities in Wisconsin and include the following:

- Establish a standard for the use of new land developments and annexations
- Identify incentives for units of government and developers to use the standard
- Provide a process for integrating updates to the Diggers Hotline Map Info System
- Identify the costs for implementing the process throughout the entire County
- Provide a direction or strategy for all of the counties in Wisconsin

Anticipated Challenges

The prototype will present a number of challenges however, the results would improve the way that communities and Diggers Hotline carry out their day to day operations. Finally, there could be far reaching benefits that would translate directly into cost reductions to the communities and utilities. The anticipated challenges are as follows:

1. How to establish the right mixture of incentives to bring parties to the table.
2. Staff commitments by the municipalities, surveyors and Diggers Hotline?
3. Will all municipalities be willing to participate?

4. What model(s) are possible? Will this result in a service bureau model?
5. Could this be integrated into each participant's current commitment without some oversight?

Work Effort

Step 1.

As noted earlier, the prototype will require a project team to provide critical input for the process in order to establish a standard format that will, at a minimum satisfy the GIS requirements of each municipality, the utilities and Diggers Hotline. The set of specifications will be the format required from the surveyor and developer in order to get the application approved. Failure of the developer to submit the drawings electronically and in the required format, could result in the plans or application for approval being delayed.

Step 2.

The prototype would provide a process for the community to electronically route the information from the new subdivision plats or certified survey maps to the utilities and Diggers Hotline. The internet and perhaps the layered Adobe software could allow for complete information about the new subdivision to be routed to the utilities and Diggers Hotline as soon as approval is given.

The prototype would then be implemented and a determination made as to changes or enhancements to provide the best results for all communities in Milwaukee County and other potential users of the updates.

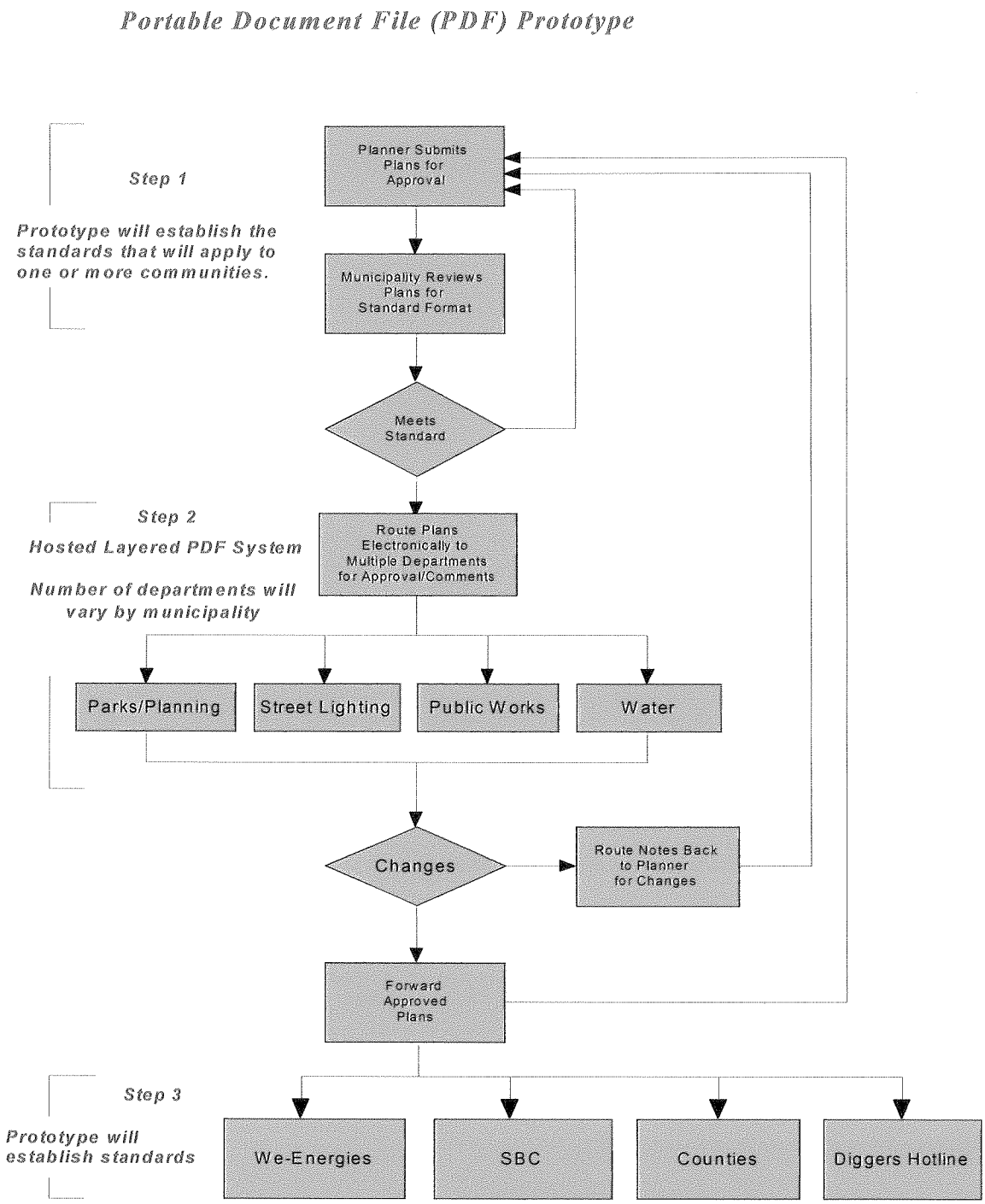
Step 3.

The final step of the prototype would include the verification that the standards established in the very first step will facilitate the integration of the new land information with the existing land information systems with the utilities and Diggers Hotline. Perhaps the greatest benefit of all will be the fact that for the first time, Diggers Hotline will have current information for serving its member organizations. It is important to remember that the member organizations are principally the municipalities and utilities. In other words, the municipalities and utilities will, through this process, be helping themselves to do a better job of providing a better service and insuring safety to its constituents and customers.

Developing a standard format, specifying a work process, completing a prototype and preparing a report with the final recommendations would require the following work steps:

STEP	TASK
1.1	Meet with communities to determine mapping requirements
1.2	Meet with utilities to determine mapping requirements
1.3	Meet with Diggers Hotline to determine mapping requirements
1.4	Draft findings report and establish standards for plan submittals
2.1	Formulate process flow for approval of plans submitted to community
2.2	Verify GIS specifications for submitted plans and department distribution
2.3	Obtain, modify, install, and test PDF layering software
2.4	Create layered PDF files for approval process
2.5	Run plan sets through approval process using layered PDF
3.1	Send approved PDF and GIS files to Utilities and Diggers Hotline
3.2	Solicit feedback from participants
3.3	Draft final report
3.4	Incorporate comments and recommendations into final report
3.5	Present results and implementation recommendations to MCAMLIS

The following flowchart illustrates the work steps for the prototype:



Project Costs

The cost for implementation of the prototype will not exceed $75,000. It was estimated that the consulting study, the development of the proposed process and the final recommendations would be completed in approximately 9 months.

Summary

Approval was given by the MCAMLIS Steering Committee to proceed with a prototype study that would produce a final report that would address the findings and recommendations on how to proceed with implementation for Milwaukee County. The prototype would produce a tested set of specifications and process flow to facilitate the GIS update requirements for the utilities and Diggers Hotline. From a mapping perspective, the new process would provide significant benefits by providing updated land information to the users that have the greatest need for that information. While individual utilities may have already mapped updates to their GIS database as a result of their planning for the construction of new infrastructure, Diggers Hotline often times receives numerous requests from contractors to locate facilities in streets that have not been added to the Diggers Hotline database. Diggers Hotline is simply left out of the land update process and relies on commercially available mapping information in order to provide service to their member organizations.

At best, the land database used by Diggers Hotline is at least one year out of date. Remember again that the member organizations of Diggers Hotline are the *municipalities and utilities*. In fact, Diggers Hotline has stated that more that 17 locating requests are processed through their call center before they are even aware of the fact that mapping updates are pending. This results in locate requests that are forwarded to the utilities for areas much larger than necessary or, in some instances, areas that are completely outside of the utilities service territory.

This translates to a number of unnecessary transmittals and unnecessary costs that are passed along to the customer and constituent. A prototype and solution for updating the Diggers Hotline would reduce the locating costs paid by the member utilities and municipalities and perhaps of greatest importance, improve safety by reducing the number of interruptions to service because facilities were struck.

PROTOTYPE RESULTS

Overview

Data Transformation from source to MapInfo

With a clear understanding as to the data requirements for Diggers Hotline and the agreement by the developers as to the data that could be provided to the communities as part of their submission of new land developments for approval, a data translator was established. There were two main objectives of the translation prototype. First, deliver a prototype dataset containing centerlines with address range information compatible with the Diggers Hotline MapInfo format. Second, demonstrate the ability to integrate the MCAMLIS data with the Diggers Hotline system by designing a repeatable, automated process.

Information provided by Diggers Hotline, MCAMLIS and the City of Franklin served as the source and target formats. The focus area defined for the project was approximately 2 square miles in the City of Franklin. The target data format was defined by a data sample in MapInfo TAB format. The ESRI shape file that was used to define the target schema from the City of Franklin served as the initial test data set.

To transform a geo-referenced street centerline file with street names, address ranges and their position on each side of the street, a specialized set of software tools were used. The process basically renamed the existing file attributes and layers to match the Diggers Hotline MapInfo specification format. Additionally, the actual data transformation from shape file format to MapInfo format was executed again using software tools designed for this process.

Using data from the City of Franklin, MCAMLIS and the City of Milwaukee as a base, the translation process was tested. The results showed that the software processed the baseline data as required and produced the output files in the MapInfo format required by the Diggers Hotline One call system. After the translation was completed, it was sent to Diggers Hotline for input into their system. Validation and processing by Diggers staff confirmed that the translator was successful in placing the Franklin and city of Milwaukee data including the MCAMLIS database into MapInfo format and Diggers hotline mapping system.

To address the problem with identifying annexations of land to and from municipalities, the Diggers Hotline staff prior to loading the new centerline data, we recommend that a boundary polygon be added around the new plats. By doing this, the One call operator will not send duplicate tickets to the utilities for locates. The specification for performing this task is not defined because it is a function that Digger's staff should complete.

1 MCAMLIS to Diggers Hotline Data Transformation

This document summarizes a data translation prototype performed by VELOCITIE Integration, Inc. for HRG Technology Group, LLC. There were two main objectives of the translation prototype. First, deliver a prototype dataset containing centerlines with address range information compatible with the Diggers Hotline MapInfo format. Second, demonstrate the ability to integrate the City of Franklin, City of Milwaukee and MCAMLIS data with the Diggers Hotline system by designing a repeatable, automated process.

1.1 Prototype Data

HRG provided several sample data sets that were used to define the source and target formats. The focus area defined for the project was approximately 2 square miles in the City of Franklin, a sample deliver from the City of Milwaukee, and all of the MCAMLIS data excluding the entire City of Milwaukee.

Each of the pertinent data sets is described in the next sections.

1.1.1 Diggers Hotline Land Information System

The target data format was defined by a data sample in MapInfo TAB format. The file that was used to define the target schema was 032105.City.of.Franklin.01.TAB. This file was analyzed to determine the output specification for the prototype data. The only features contained in the sample MapInfo data were street centerlines. The coordinate system extracted from the MapInfo sample data was Lat Long for MapInfo type 0 Datum, World Geodetic System of 1984.

The attribute schema extracted from the sample data is summarized in the table below.

Column Name	Format	Comments
Street	Char (65)	The full street name
Troncon_ID	Char (12)	Unknown (blank in sample), was left blank in prototype.
City_ID	Char (15)	Unknown (blank in sample), was filled with the city name in the prototype.
FromLeft	Decimal (8, 0)	The starting left address for the segment
ToLeft	Decimal (8, 0)	The ending left address for the segment
FromRight	Decimal (8, 0)	The starting right address for the segment
ToRight	Decimal (8, 0)	The ending right address for the segment
DebutX	Decimal (12, 6)	The x coordinate of the first point of the segment
DebutY	Decimal (12, 6)	The y coordinate of the first point of the segment
FinX	Decimal (12, 6)	The x coordinate of the last point of the segment
FinY	Decimal (12, 6)	The y coordinate of the last point of the segment
Av_lot	Char (1)	Unknown, left blank in the prototype
Ar_lot	Char (1)	Unknown, left blank in the prototype
Grid1	Char (65)	Unknown, left blank in the prototype
Grid2	Char (65)	Unknown, left blank in the prototype
Grid3	Char (65)	Unknown, left blank in the prototype
Other1	Char (65)	Unknown, left blank in the prototype
Other2	Char (65)	Unknown, left blank in the prototype
Other3	Char (65)	Unknown, left blank in the prototype
Other4	Char (65)	Unknown, left blank in the prototype
Other5	Char (65)	Unknown, left blank in the prototype

1.1.2 MCAMLIS Centerline data

The Street Centerline component of the MCAMLIS database was used as the source for the prototype. Shapefiles were delivered to VELOCITIE on 11/16/2005. The source data was in NAD 27, Wisconsin State Plane South (FIPS 4803) with units in Feet. An Access database called ADDRESS2000.mdb was

also used as an input to the process. The Centerlines table in the database contains the address range and other attributes for the MCAMLIS centerlines.

The source data schemas are described below:

Street Shapefile

Column Name	Format	Comments
CLINEID	Char (32)	The street ID (used to link to Access table)

Centerline Table

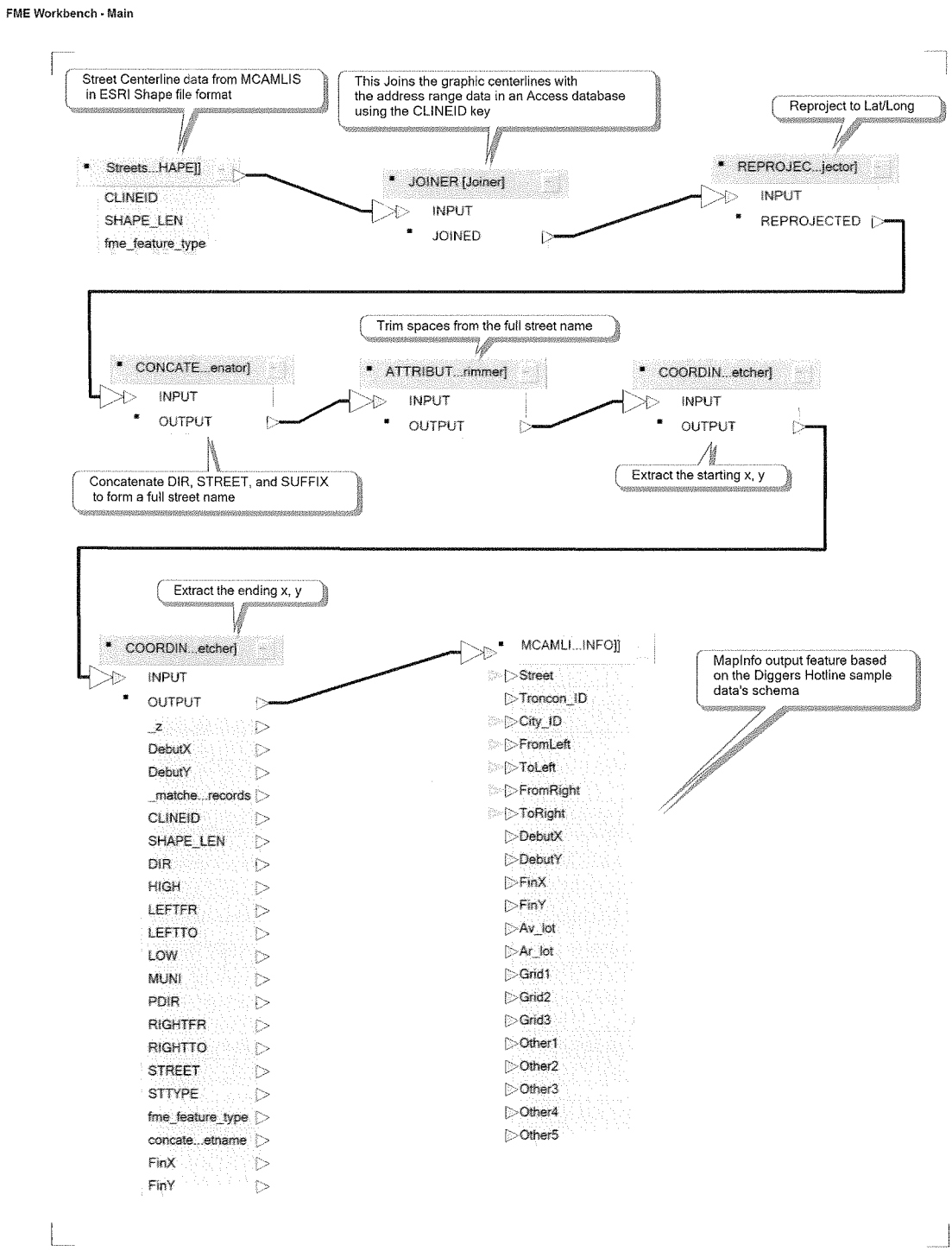
Column Name	Format	Comments
CLINEID	Char (32)	The street ID (used to link to street segments)
DIR	Char (2)	The street direction (prefix) used to make the full street name
STREET	Char (30)	The street name used to make the full street name
STTYPE	Char (4)	The street type used to make the full street name
PDIR	Char (2)	The street direction (suffix) used to make the full street name
LOW	Char (5)	The low address of the segment (not used in the prototype)
HIGH	Char (5)	The high address of the segment (not used in the prototype)
LEFTFR	Char (5)	The starting left address for the segment
LEFTTO	Char (5)	The ending left address for the segment
RIGHTFR	Char (5)	The starting right address for the segment
RIGHTTO	Char (5)	The ending right address for the segment
MUNI	Char (21)	The municipality name, used to fill City_ID in the prototype

1.2 Data Transformation Process

The MCAMLIS data was transformed into the Diggers Hotline format using Safe Software's FME product. An FME workspace was created and configured to create the appropriate MapInfo data set from the MCAMLIS input data.

A process flow is shown below, which is the actual FME workspace that was used to transform the data. Following the diagram is a description of each step in the

process. Each process description relates to a box on the diagram, starting in the upper left and proceeding in the direction of the arrows.



1.2.1 MCAMLIS Input data

The process begins with the input shapefile from MCAMLIS. The only meaningful attribute is the CLINEID.

1.2.2 Joiner Factory

The "Joiner Factory" is an FME configured function which joins all of the attributes from the Access database table to the centerline features in the shapefile.

1.2.3 Reprojection

The next FME Factory reprojects the data from NAD27 State Plane coordinates to the Lat/Long WGS84 system used by Diggers Hotline.

1.2.4 Concatenate Street Name Parts

The MCAMLIS source data stores street names in distinct parts. These attributes are DIR, STREET, STTYPE, and PDIR. The MapInfo data only contains Street as a single attribute. Therefore, this function concatenates the MCAMLIS street name components into a single string.

1.2.5 Trim Street Name

After the component attributes are concatenated together, the street name may contain leading or trailing spaces as a result of the concatenation. This function trims the spaces from the name.

1.2.6 Coordinate Extractor

The MapInfo data stores the starting and finishing x, y coordinates as attributes. This factory extracts the first x, y coordinate from the centerline and stores the values in attributes named DebutX and DebutY.

1.2.7 Coordinate Extractor (End)

This factory is similar to the one above, except the endpoints are extracted into FinX and FinY attributes.

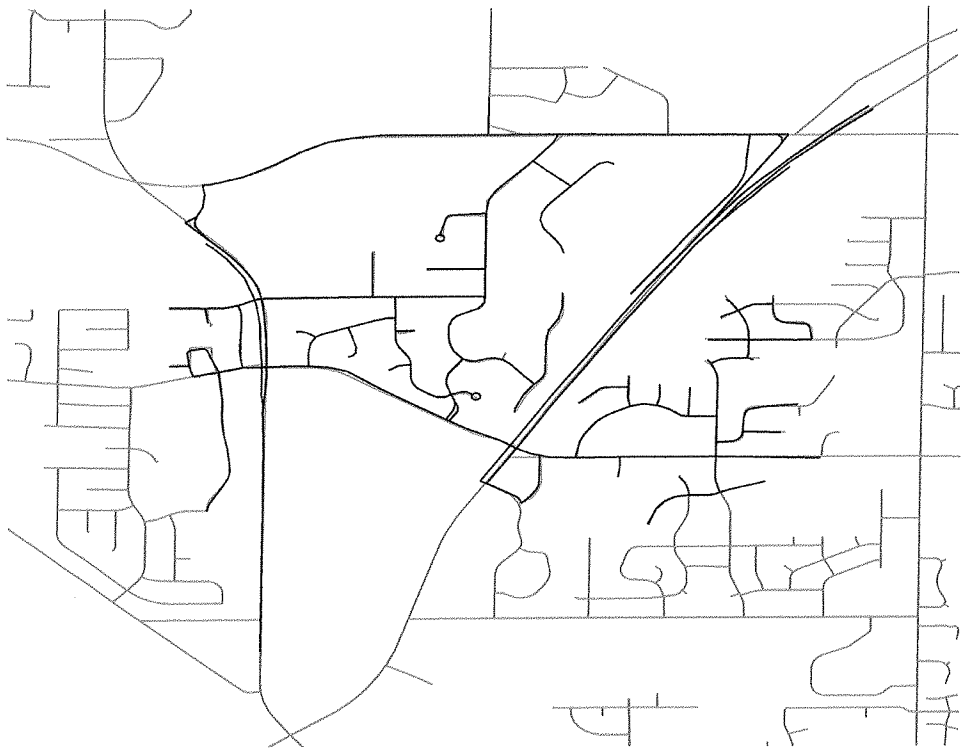
1.2.8 MapInfo Output Data

The final box on the diagram represents the resulting MapInfo dataset.

1.3 Results and Observations

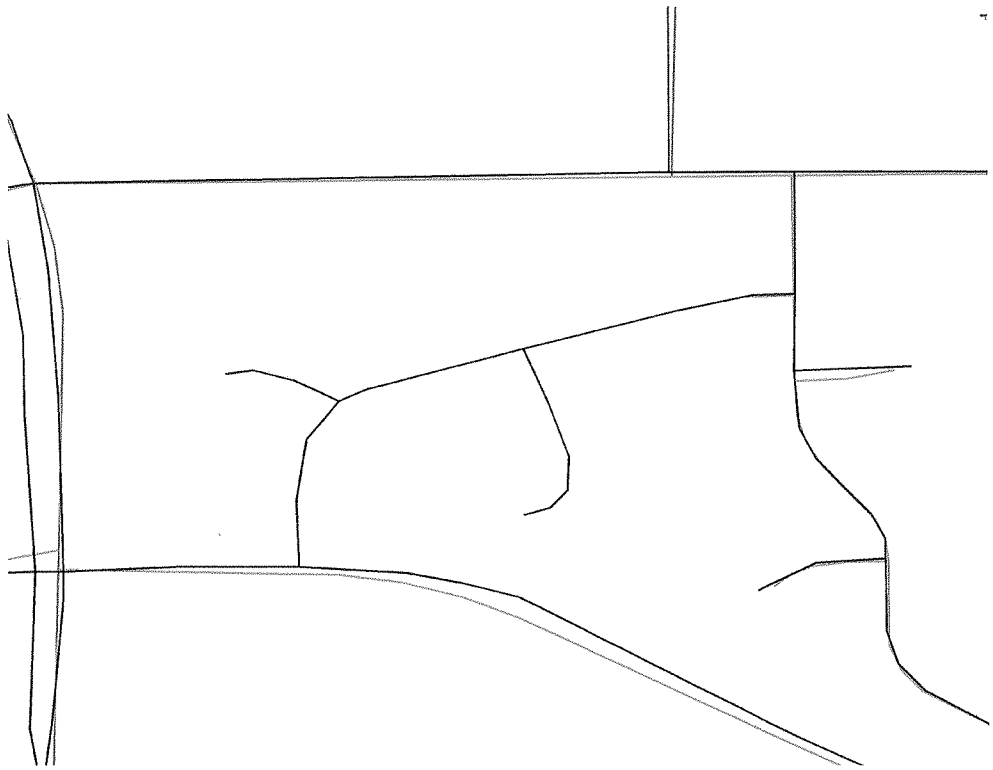
The sample Diggers Hotline data (in MapInfo format) covers a relatively small area. Because the sample data set is small, the results of examining the data differences are inconclusive.

The graphic above is an overview of Milwaukee County with the MCAMLIS centerline data shown as grey lines. The highlighted area is the area covered by the Diggers Hotline sample data.



This graphic shows some additional detail of the sample area. The Diggers Hotline sample is shown in black, and the MCAMLIS centerlines are red. In general the spatial coincidence of the two data sets is compatible.

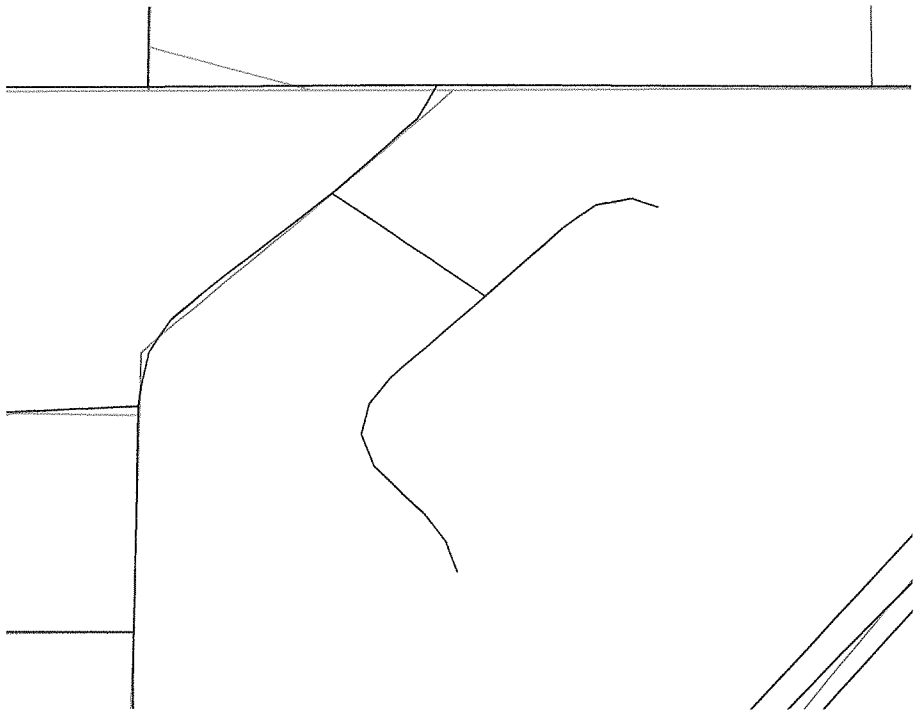
It was observed that there are some cases of centerlines in the Diggers Hotline data that do not appear in MCAMLIS.



Sample 1.

The first sample area is shown as *Sample 1.* The red lines are the MCAMLIS centerlines. The Black lines are the Diggers Hotline MapInfo centerlines. The grey lines are from the MCAMLIS right-of-way data and are show as reference although the right of way data was not translated.

In this area, the street (W ST STEPHANS DR) appears in the MapInfo data along with two Cul de Sacs (S BARBIAN CT and S JOSHUA CT) but these streets were not in MCAMLIS as centerlines. The Right of Ways were in MCAMLIS and geographically located very close to the Diggers Hotline centerlines. A small centerline segment can be seen in the MCAMLIS data at the east end of the street, which was identified as ST STEPHENS DR in the MCAMLIS Centerline table.



Sample 2.

The next sample area is show as *Sample 2.* This shows a similar situation where Right of Way lines appear in MCAMLIS without centerlines. These streets were W STONE HEDGE DR and S CAMBRIDGE DR. The streets were in the Diggers Hotline sample but not in MCAMLIS as centerlines (but the Right of Ways did appear).

2 Data Update Specifications

This section proposes a means for automating the updates to the Diggers Hotline land information database immediately upon approval of new subdivision plats, certified survey maps, etc. This includes establishing a set of electronic data specifications to which land surveyors, employed by land owners and developers, can comply with when submitting development plans for community approval. The proposed specifications include file format, geo-reference requirements, and feature and attribute data requirements for centerline and address data to be merged into the Diggers Hotline GIS.

The process used to verify that the data being added does not duplicate or overlap existing data and the quality control steps to verify the accuracy of the submitted data is not covered by this proposal. Also, edge matching the new data submittals to existing data is not defined. These processes are inherently interactive, and automation of these tasks is generally not feasible.

2.1 File Format

The basic requirements for the file format are an established, stable, published file format that can store geographic data. Attribute support and a reference to a coordinate system are also required. The ESRI shapefile format is well known and meets all of these requirements. Also, the prototype Diggers Hotline transformation from MCAMLIS data has already demonstrated the ability to read data in shapefile format using a standard software package. Details regarding the shapefile format can be found at: http://www.esri.com/library/whitepapers/pdfs/shapefile.pdf

2.2 Geo-Reference Information

The data transformation process is capable of extracting the coordinate system from the shapefile and projecting it to the Diggers Hotline specification. However, some coordinate systems are can cause projection problems so the recommended approach is to use a standard. One of the most universal formats is the system already being used in the Diggers Hotline Database. The Open GIS Consortium (OGC) Well Known Text description of this system is as follows:

OGC Well Known Text: GEOGCS["Lat Long for MAPINFO type 0 datum",DATUM["MAPINFO",SPHEROID["World Geodetic System of 1984",6378137,298.257223563]],PRIMEM["Greenwich",0],UNIT["degree",0.01 74532925199433]]

2.3 Feature Attribute Specifications

The only feature used in this update process is the Street Centerline (linear) feature. The attributes required to update the Diggers Hotline database essentially mirror the attributes that were used to transform the MCAMLIS data. They are as follows:

Column Name	Format	Comments
STREET	Char (30)	The full street name
LEFTFR	Char (5)	The starting left address for the segment
LEFTTO	Char (5)	The ending left address for the segment
RIGHTFR	Char (5)	The starting right address for the segment
RIGHTTO	Char (5)	The ending right address for the segment
MUNI	Char (21)	The municipality name

Layered Portable Document Format (PDF) Files

Utility Interviews

Numerous discussions were had with the utilities and Diggers Hotline to determine whether geo-referenced layered PDF files would add benefit to the Diggers Hotline prototype. The conclusions that were reached indicated that all of the information required by the utilities needs to be in vector format. The utilities were strongly in favor of any effort that could be made that would establish one standard for the surveyors to use when submitting a subdivision plat or certified survey map. A translator could then be developed that would serve the same purpose as the translator that was developed for the MapInfo. That translator would provide significant benefit for both the gas and electric users.

Discussions were also had with AT&T (SBC) concerning their mapping and updating procedures. Their process pretty much mirrored the process in place at We-Energies. AT&T personnel use whatever source is available and digitizes that information into their existing landbase.

Both utilities however did voice their interest in having access to a file or a library of PDF layered subdivision information that they could reference. There could be instances where the utilities would have interest in knowing whether the platting information (sometimes preliminary information) agrees with the final approved plat. A reference file would provide that information.

There have also been instances where utilities move into areas that were previously not served. A reference PDF file would provide quick answers concerning platting information and planned construction in those areas.

Finally, layered PDF files still have potential for providing municipalities with a process for routing subdivision plats through their departments for approval. The PDF format would provide an opportunity to make notations or changes that could be communicated immediately to all of the other personnel making the review. The developer on the other hand would have comfort in knowing that the original drawing was not altered or

compromised. Finally, the process could be completed without having to route multiple sets of drawings through the various municipal departments.

Conclusions/Recommendations

From the discussions with personnel at the utilities and Diggers Hotline, it would seem appropriate to pursue the development of a standard for surveyors to use when submitting new subdivision plats and certified survey maps. Potentially, the utilities, MCAMLIS, and the municipalities could all benefit by the fact that every surveyor would submit the plans in the same format and therefore the same translator could be used for their own GIS.

It will be recommended to the Steering Committee that a proposal be submitted that would address the issue of a comprehensive land information standard. The project would include land surveyors, SEWRPC, the State of Wisconsin, and municipalities already involved with implementing GIS programs.

Diggers Hotline Prototype
Interview List

The following individuals were contacted and interviewed as part of the prototype project for Diggers Hotline. All individuals made an invaluable contributions to the project.

AT&T (SBC Wisconsin)

Kevin S. Anderson, Area Manager – OSP Engineering

James C. Owen, Cable Damage Prevention Project Manager

Mary Beth Iglinski, Mapping Supervisor

City of Franklin

John M. Bennett, P.E., City Engineer/Director of Public Works, City of Franklin

Ronnie Asuncion, Engineering Technician

Todd Niedermeyer, President, Geographic Marketing Advantage, LLC

City of Milwaukee

Nancy A. Olson, Enterprise Information Manager

Marcia Lindholm, P.E.

Philip Mroczkowski, Drafting Technician, Map Maintenance, City Paving

City of Glendale

William Huegel, P.E., Acting Mayor, City of Glendale

Diggers Hotline

John Zaganczyk, President, Diggers Hotline

James Aron, Data Control Supervisor, Diggers Hotline

Luanne M. Lo Monte, Manager, Call Center Operations, Diggers Hotline

James Owen, Director, Diggers Hotline

Bennet G. Zweifel, Vice President, Operations, Diggers Hotline

Layton Graphics

Michael Bufkin, Vice President, DTO, Layton Graphics

Milwaukee County

Kevin R. White, GIS Supervisor, Milwaukee County-City Campus

Kathleen A. Bach, Geographic Information Technician, Milwaukee County

Milwaukee Metropolitan Sewerage District

Don Nehmer, Capital Program Business Manager, MMSD

National Survey & Engineering

Robert Jones, R.L.S., Project Manager, National Survey & Engineering

R.A.Smith & Associates

George Glocka, R.L.S., Risk Manager, R.A.Smith & Associates

Ruekert-Mielke

Richard Eberhardt, P.E., R.L.S., Project Engineer, Ruekert-Mielke

Southeastern Wisconsin Regional Planning Commission

Dr. Kurt W. Bauer, Chairman, MCAMLIS Steering Committee

Thomas D. Patterson, Manager, SEWRPC

Velocitie Integration Inc.

Kenneth Lenser, Jr., Director Integration Services, Velocitie Integration Inc.

Dean Peterson, Senior Systems Architect, Velocitie Integration Inc.

Wisconsin Department of Administration

Sean Walsh, Plat Review Committee, Wisconsin DOA

We-Energies

John C. Place, P.E, Mgr. Engineering – Planning, Maps & Records, We-Energies

German Rodriguez, Application Team Leader – GIS/CGS, We-Energies

Don Coe, Supervisor Facilities Location, Customer Operations, We-Energies

Karen Gross, Supervisor, Maps and Records, We-Energies

Dana Kahle, GIS/Mapping Supervisor – Electric, We-Energies

Timothy Marquardt, Electric Mapping Supervisor, We-Energies

John Zaganczyk, Director, Credit & Collection, We-Energies

Wisconsin Society of Land Surveyors

Harold S. Charlier, Executive Director, Wisconsin Society of Land Surveyors

Date: May 18th, 2005

To: MCAMLIS Steering Committee

From: John Place
Manager, We-Energies

Re: Status Update, Project Work for Diggers Hotline

The following status report reflects the activities completed as of May 18th, 2005:

- Contract signed, January 25, 2005
- Established phases of work to be completed as part of the project (see attached)
- Established preliminary workflow process for implementation (see attached)
- Contacted participants from Milwaukee County to familiarize them with the project and recruit their participation. Project Team has been established. (see attached)
- Obtained sampling of data from each of the participants including:
    - City of Franklin
    - Diggers Hotline
    - We-Energies
    - Milwaukee Metropolitan Sewerage District
    - Milwaukee County (MCAMLIS)
    - SBC
- Data is currently being evaluated to determine the appropriate process for facilitating the updates of information to each of the pilot project participants

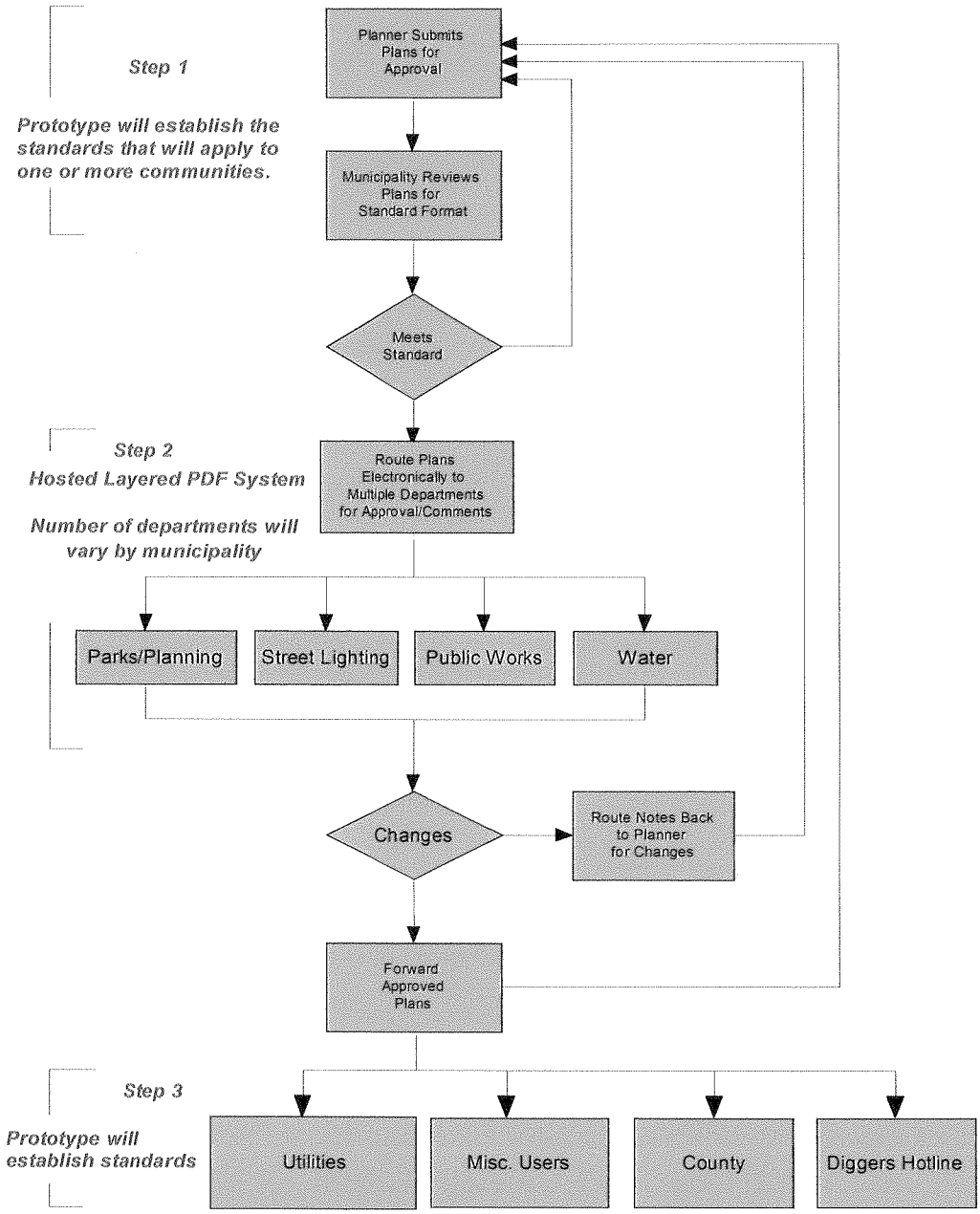
Diggers Hotline Project Phases

MCAMLIS Diggers Hotline Status Report

Step Number	Project Tasks	Project Status
1	Meet with Franklin, 4 Utilities and Diggers Hotline to list objectives	Completed
2	Meet with Wisconsin Land Surveyors to define scope of project	Underway
3	Review and finalize program objectives and scope with all participants	Underway
4	Define and integrate prototype area, gather data	Completed
5	Formulate procedural flow for integrating land information updates into Diggers Hotline data base, evaluate data from utilities, Diggers Hotline, MCAMLIS and City of Franklin	Underway
6	Finalize and test procedural flow	
7	Develop .pdf and GIS specifications for platted plans delivered to Diggers Hotline	
8	Propose method for automating and updating Diggers Hotline database with new subdivision plats	
9	Obtain and modify .pdf software	
10	Install and test layering software	
11	Create layered .pdf files for approval process	
12	Run 2 plan sets through approval process using layered .pdf process	
13	Integrate approved .pdf and GIS files with Diggers Hotline database	
14	Present draft results and solicit feed back from participants	
15	Incorporate comments and actions into final report	
16	Produce final report	
17	Present final results to MCAMLIS and participants	

Preliminary Workflow

Portable Document File (PDF) Prototype



To: MCAMLIS Steering Committee

From: John Place, P.E.,
Manager Planning Engineering and Mapping

Date: November 1, 2005

SUBJECT: STATUS REPORT NO. 2 ON DIGGERS HOTLINE PROJECT

This memorandum sets forth the progress made on the Diggers Hotline project since the last MCAMLIS Steering Committee meeting on May 18th, 2005. The first attachment includes an updated project task report. The remaining portion of the report includes a narrative of the work activities completed.

Status: November 1, 2005

Diggers Hotline Project Phases

MCAMLIS Diggers Hotline Status Report

Step Number	Project Tasks	Project Status
1	Meet with Franklin, 4 Utilities and Diggers Hotline to list objectives	Completed
2	Meet with Wisconsin Land Surveyors to define scope of project	Completed
3	Review and finalize program objectives and scope with all participants including City of Milwaukee and Milwaukee County	Underway
4	Define and integrate prototype area, gather data	Completed
5	Formulate procedural flow for integrating land information updates into Diggers Hotline data base, evaluate data from utilities, Diggers Hotline, MCAMLIS and City of Franklin	Completed
6	Finalize and test procedural flow	Underway
7	Develop .pdf and GIS specifications for platted plans delivered to Diggers Hotline	Underway
8	Propose method for automating and updating Diggers Hotline database with new subdivision plats	Underway
9	Obtain and modify .pdf software	Completed
10	Install and test layering software	Completed
11	Create layered .pdf files for approval process	Underway
12	Run 2 plan sets through approval process using layered .pdf process	Underway
13	Integrate approved .pdf and GIS files with Diggers Hotline database	Underway
14	Present draft results and solicit feed back from participants	
15	Incorporate comments and actions into final report	
16	Produce final report	
17	Present final results to MCAMLIS and participants	

1. **Street Segment Connectivity**

   A significant effort went into the research of the data requirements and database format for Diggers Hotline. Of significant importance is the fact that there is no connectivity from one street segment to another. Transmittals or locate requests received for any address location or range of addresses is queried by each individual street segment. The fact that one street span crosses a county line is important to Diggers Hotline however it is not important that there is connectivity between the street segments.

   This means that it is not necessary for street segments to connect at county lines and differences between positional accuracies between county lines is not important to Diggers Hotline.

   This issue is important because it means that blocks of data such as the MCAMLIS database can be inserted into Diggers Hotline without having to connect the bordering street segments and there does not have to be concern whether the streets aligns properly.

2. **Electronic Standard Format**

   Several meetings were held with the Executive Director of the Wisconsin Society of Land Surveyors, Harold Charlier to discuss what contribution, if any, the Society could provide in terms of advice or technical support for the Diggers Hotline project.

   Follow-up meetings were also held with the State of Wisconsin Land Information Review Committee to get direct input concerning the electronic information provided on new land proposals submitted by developers. Richard Eberhardt, Ruekert-Mielke, Robert Jones, National Survey & Engineering, George Glocka, R.A.Smith and Sean Walsh, Wisconsin Department of Administration, attended and discussed the approach that we might take to get the information, in electronic format, to Diggers Hotline as soon as the new land development is approved.

   It was suggested that to standardize the entire plat or new land development proposal might be very time consuming and perhaps result in a solution that would require an extraordinary amount of time and effort by developers. Considering that Diggers Hotline will benefit more from a solution that would be delivered sooner rather than later, the extended study and effort is not being considered.

   It was the consensus of the group that the focus of the Diggers Hotline project should focus on the minimum data that would benefit Diggers Hotline. The

minimum data would include the geo-referenced data for the street centerline segments, address ranges, intersection node points and street names. It was also the consensus that the data be delivered in a format such as AutoCad that would be available to all developers.

Considering the fact that the approval to proceed with a development is typically given at the local level and usually in the Engineering area, it was suggested that the Municipal Engineering Departments should require that the new land information for Diggers Hotline be submitted in an electronic format and in a standard format that would be determined by our study.

3. **Process Changes**

Met with MCAMLIS Project Manager, Kevin White. Provided an update as to the status of the project. Informed Mr. White about the fact that the engineering departments could, by controlling the issuance of permits, also require that the data for Diggers Hotline be in a standardized electronic format. Provided Mr. John Bennett, Chairman, Intergovernmental Coordination Council of Milwaukee County with a project update.

Mr. Bennett offered to take the issue to the ICC so that all communities in Milwaukee County could adopt the procedure and process. This step still needs to be completed.

After additional discussions with Milwaukee County, Project Manager Kevin White suggested that perhaps Milwaukee County could require the data for Diggers Hotline before approving the new plat or land development. This would eliminate the need to get all 18 communities to individually adopt the new procedure. This issue is addressed under item #4.

4. **Register of Deeds**

Met with Paul Mika, Register of Deeds office to discuss the Diggers Hotline project. After considerable discussion, it was determined that perhaps the Treasurers Department would be the only department that could make it a requirement to submit the data in electronic format and provide the appropriate data for Diggers Hotline. ***An additional meeting will be arranged with County Treasurer, Mr. Daniel Diliberti.***

5. **Data Programming and Standards**

Programming is now underway to establish a format for street centerline segments, node points for street intersections, geo-coded control for new streets, street names, and address ranges. At this point no changes have been determined for the utilities.

6. **Diggers Hotline, MCAMLIS Database**

At this point in time, the plan would be for Diggers Hotline to take all of the land information from MCAMLIS and to add only the new land information identified in Item #2 as it is approved by municipalities. On an annual basis, Diggers Hotline would then refresh their database with a new copy from MCAMLIS. The intent is to minimize the amount of information that would come from the municipalities but have all of the information available to Diggers Hotline after MCAMLIS updates have occurred.

SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION
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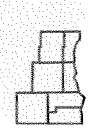


MEMORANDUM

TO: MCAMLIS Steering Committee

FROM: Kurt W. Bauer, PE, RLS, AICP
Milwaukee County Surveyor

DATE: January 17, 2006

SUBJECT: MILWAUKEE COUNTY SURVEYOR ACTIVITIES—2005

This memorandum is intended to provide the MCAMLIS Steering Committee with a report on the work of the Milwaukee County Surveyor through December 2005. While the office and duties and functions of the County Surveyor are prescribed by Section 59.45 of the *Wisconsin Statutes*, in Milwaukee County the necessary work, pursuant to the direction of the County Board, is funded by document recording fees retained by the County pursuant to Section 59.43(2) of the *Wisconsin Statutes*. Since the MCAMLIS Steering Committee is charged by contract between Milwaukee County and the public and private utilities operating within the County with administering these retained recording fees, a report to the Committee on the activities of the County Surveyor is in order.

Within Milwaukee County, the U.S. Public Land Survey System has been combined with the State Plane Coordinate system and the National Geodetic Vertical Control System to provide the high order horizontal and vertical control survey network required for the preparation and maintenance of the MCAMLIS large-scale topographic and cadastral maps. Therefore, the work of the Milwaukee County Surveyor entails not only the maintenance of the U.S. Public Land Survey System as such, but also the maintenance of the MCAMLIS horizontal and vertical control survey network. As such, the work requires expertise in geodetic as well as plane surveying and in the legal aspects of property boundary determination.

Attachment 1 to this memorandum consists of a map of Milwaukee County on which are shown the location of all of the corners of the U.S. Public Land Survey System for which various types of perpetuation activities were undertaken in the calendar year 2005. These activities involved the replacement of section, quarter section, witness and meander corners which were reported as damaged, disturbed or destroyed by construction, or other activities or actions. The work involved the setting of new monuments, and, as necessary, the replacement of attendant witness marks and benchmarks. New records of U.S. Public Land Survey control station records—dossier sheets—were prepared for each corner concerned.

A copy of each of the new dossier sheets is provided in Attachment 2 to this memorandum. As indicated on Attachment 1, a total of 117 U.S. Public Land Survey corners were involved in the perpetuation activity from January 1, 2005, through December 31, 2005. In some cases, the perpetuation activity resulted in the determination of revised State Plane coordinate values for the corners and revised elevations for both the corners and the attendant benchmarks. In such cases, new control survey summary diagrams were prepared. A copy of each of the revised diagrams concerned is herewith provided as Attachment 3.

Pursuant to State Statutes, Registered Land Surveyors must provide to the County Surveyor for filing copies of all plats of surveys other than land subdivision plats and certified survey maps prepared for surveys conducted within the County. Through December 31, 2005, the County Surveyor received, indexed, and filed 2,246 records of land surveys completed within the County, bringing the total number of records of land surveys completed within the County, which have been filed with the County Surveyor since the inception of this work in 1984, to 41,010. The filed records are indexed to permit retrieval by name of the surveyor concerned, the property owner concerned, the date of the survey plat, the civil division, and the U.S. Public Land Survey one-quarter section within which the plat is located.

The County Surveyor also assists MCAMLIS in the preparation of contracts and specifications for large scale topographic and cadastral mapping and for special projects, such as the mapping of hazards to air navigation in the vicinity of General Mitchell International Airport.

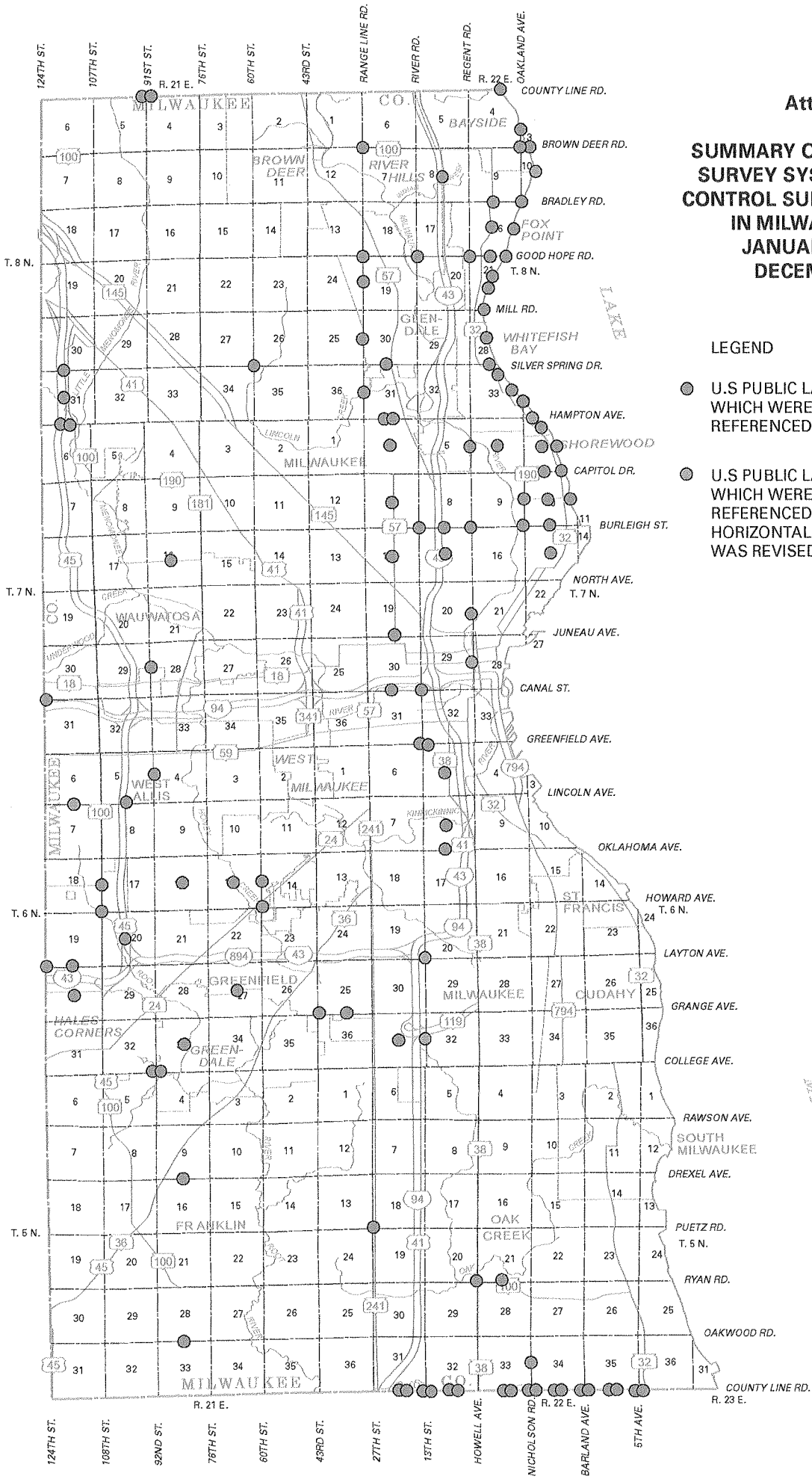
KWB/nn

#114611 v1 - SURVEYOR REPORT TO MCAMLIS

Attachments

Attachment 1

SUMMARY OF U.S. PUBLIC LAND SURVEY SYSTEM CORNER AND CONTROL SURVEY PERPETUATION IN MILWAUKEE COUNTY: JANUARY 1 THROUGH DECEMBER 31, 2005



LEGEND

- U.S PUBLIC LAND SURVEY CORNERS WHICH WERE REMONUMENTED AND/OR REFERENCED IN 2005 (117)
- U.S PUBLIC LAND SURVEY CORNERS WHICH WERE REMONUMENTED AND REFERENCED AND FOR WHICH HORIZONTAL CONTROL SURVEY DATA WAS REVISED IN 2005 (6)

Source: SEWRPC.

MILWAUKEE COUNTY
AUTOMATED MAPPING AND
LAND INFORMATION SYSTEM

c/o Department of
Transportation and Public Works
2711 West Wells Street, Room 427
Milwaukee, Wisconsin 53208-3509
Telephone (414) 278-2176
Fax (414) 223-1982

MEMORANDUM

TO: MCAMLIS Steering Committee

FROM: Kevin R. White, MCAMLIS Project Manager

DATE: December 19, 2005

SUBJECT: Distribution of Digital Orthophotography acquired under the Topographic Mapping Replacement Program by the Southeastern Regional Planning Commission.

BACKGROUND

SEWRPC has been conducting aerial photography programs on behalf of the region for the past 40 years. Since 1995 these programs have produced digital image products. SEWRPC has been a clearinghouse for regional aerial photo and other digital datasets. Parties interested in acquiring regional data routinely request the datasets directly from the Commission.

The regional aerial photography programs are financed on cost share basis with the regional partners. Due to funding shortfalls in the 2005 program, the Milwaukee County portion was paid for as part of the MCAMLIS 2005 Topographic Mapping Project. Since the Milwaukee County digital orthophotography was acquired outside of the regional program, SEWRPC does not have express authority to distribute Milwaukee County 2005 digital orthophotography. SEWRPC charges the cost of reproduction when distributing the aerial photography and the money collected is used for future aerial photography programs.

In an effort to simplify requests for regional data, the Commission is seeking MCAMLIS Steering Committee approval to distribute Milwaukee County 2005 digital orthophotography.

FISCAL CONSIDERATIONS

The MCAMLIS program, as a matter of policy, only charges cost of reproduction, handling, and distribution. Therefore authorizing SEWRPC to distribute Milwaukee County 2005 digital orthophotography would have no significant fiscal impact.

RECOMMENDATION

It is recommended that the MCAMLIS Steering Committee authorize SEWRPC to distribute the Milwaukee County 2005 digital orthophotography for the cost of reproduction and use the proceeds for future regional orthophotography programs.

* * * * *

AGREEMENT

THIS AGREEMENT, entered into this _____ day of _____, 2006, by and between the City of Milwaukee Department of Administration, Information and Technology Management Division (hereinafter referred to as the " City"); and the Milwaukee County Automated Mapping and Land Information System Steering Committee (hereinafter referred to as the "Steering Committee").

WITNESSETH:

WHEREAS, by Resolution No. 88-379, the Milwaukee County Board of Supervisors requested the Southeastern Wisconsin Regional Planning Commission to conduct a feasibility study pertaining to an automated mapping and land information system; and

WHEREAS, the requested feasibility study was completed and documented in SEWRPC Community Assistance Planning Report No. 177, "Feasibility Study for a Milwaukee County Automated Mapping and Land Information System," published in October 1989; and

WHEREAS, by resolution adopted on November 8, 1990, the Milwaukee County Board of Supervisors, working in cooperation with the utilities concerned, created a public-private partnership to implement the proposed Milwaukee County automated mapping and land information system, including creation of a Steering Committee to provide oversight in the implementation of the system recommended in SEWRPC Community Assistance Planning Report No. 127; and

WHEREAS, the aforereferenced Milwaukee County resolution adopted on November 8, 1990, further authorized the execution of a Cooperative Agreement between Milwaukee County and the public and private utilities serving Milwaukee County, whereby the County and such utilities agreed to jointly fund the development of the Milwaukee County automated mapping and land information system)., such Agreement delegating to the aforereferenced Steering Committee full responsibility for all policy matters relating to the conduct of the work program, including proposed contracts and specifications and the selection of contractors; and

WHEREAS, the City Enterprise Information Manager serves as a member of the aforereferenced Steering Committee and the City actively participates in implementation of the MCAMLIS; and

WHEREAS, the City desires the financial support of the MCAMLIS program to maintain the cadastral maps within the City of Milwaukee to ensure conformance with selected MCAMLIS standards; and

WHEREAS, on August 26, 1999, the City, the Steering Committee, and the Commission, through an assignment, entered into an Intergovernmental Cooperation Agreement (ICA) whereby the City would provide technical services to the Steering Committee; and

WHEREAS, the Steering Committee on September 14, 2004, formally authorized the County to accept the responsibilities of Project Manager for the implementation of the recommended automated mapping and land information system;

NOW, THEREFORE, in consideration of the mutual promises of each agency made to the other, the fulfillment of the terms and conditions, agreements, and understandings hereinafter set forth,

I. Scope of Work

In general, the City agrees to perform all of the tasks specified herein. Other tasks to be completed by the City not covered herein will be carried out under separate agreements.

The City will provide professional and technical information technology services. This will include maintenance on cadastral maps and the street address database in the adopted Milwaukee

County geodatabase format. Copies of the data will be delivered to the MCAMLIS project manager at a minimum bi-annually. This arrangement will allow data collected and housed at the City of Milwaukee to be maintained in the same format that the County of Milwaukee uses to store and retrieve the MCAMLIS cadastral data.

Should software data transfer protocols and standards be developed, the City will work with Milwaukee County staff to deliver the cadastral and street address data on a more frequent basis.

II. Timing

All services to be performed under this Agreement shall be carried out over the period beginning July 1, 2006, and ending on June 30, 2007.

III Compensation to City

The Steering Committee shall pay to the City the following amounts for those services described above:

SERVICES PROVIDED	AMOUNT
MCAMLIS Cadastral and Street Address Database Maintenance	$ 67,115
ESRI ArcGIS Software License (* One time Cost)	$ 6,300
Annual software maintenance	$ 1,500
Total	**$ 74,915**

IV Method of Compensation

Compensation is to be provided to the Department of Administration Information and Technology Management Division (ITMD) for services performed through the County MCAMLIS Program Org. 1923. ITMD will request on a quarterly (September 30, December 31, March 31, June 30) basis reimbursement for said services provided.

If, during the course of carrying out the work elements identified herein, additional unanticipated work efforts not identified in the scope of work contained herein become necessary for successful project completion in the judgment of the City or in the judgment of the Steering Committee, then it is agreed that the City can request an amendment to the scope of work, with an attendant increase in the maximum amount payable to the City under this Agreement. Such an amendment would require the approval of both the City and the Steering Committee before becoming effective.

V. Support and Materials to be Provided by Others

It is assumed that the members of the Steering Committee, on behalf of their respective public agencies and private utilities, agree to make available without charge to the City all existing digital and hardcopy maps, documents, reports, legal records, and related materials deemed by the City to be needed to carry out its responsibilities under this Agreement. If this assumed level of cooperation does not materialize, then it is agreed that the City may, at its discretion, request payment from the Steering Committee for these costs above and beyond the total amount set forth in Section III of this Agreement.

VI. Ownership of Data

As the funds that are to be paid to the City for carrying out the herein described and required work are MCAMLIS project funds, the City agrees to share the data. The City, however, will retain sole ownership of all map files as they exist in the City digital structure. As a condition of receiving payment from MCAMLIS, the City agrees that MCAMLIS will be free to use, reproduce, modify, display, and distribute the digital map files in the MCAMLIS digital structure.

The City will retain a nonexclusive, irrevocable and perpetual license to use and distribute the digital map files to any parties it desires.

VII. Subcontracts

Although the City does not anticipate use of subcontractors, the City agrees to bring any such subcontracts to the Steering Committee for its approval prior to execution.

VIII. Indemnity

Except for acts done or taken at the direction of or pursuant to the Steering Committee policy or procedures, the City agrees to the fullest extent permitted by law, to indemnify, defend and hold harmless, the Steering Committee, and its agents, officers and employees, from and against all loss or expense including costs and attorney's fees by reason of statutory benefits under Worker Compensation Laws, and/or liability for damages including suits at law or in equity, caused by any wrongful, intentional, or negligent act or omission of the City, or it's (their) agents which, may arise out of or are connected with the activities covered by this agreement.

IX. Authorization

The Steering Committee approved the execution of this Agreement by action taken on February 7th, 2006.

IN WITNESS WHEREOF, This Agreement executed the date and year first above written.

FOR: **CITY OF MILWAUKEE**

Randolf A Gschwind Date
Information and Technology Management
Division

WITNESSED BY:

Date

APPROVED AS TO FORM BY CORPORATION COUNSEL

Bill Domina Date
Corporation Counsel

REVIEWED AS TO INSURANCE REQUIREMENTS

John R. Rath Date
Risk Manager

APPROVED WITH REGARDS TO COUNTY ORDINANCE CHAPTER 42

Freida Webb, Director Date
Disadvantaged Business Development

FOR: **MILWAUKEE COUNTY AUTOMATED MAPPING AND LAND INFORMATION SYSTEM STEER COMMITTEE**

Kurt W. Bauer, Chairman Date

WITNESSED BY:

Date